

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 KHD 7,5 a
Edition 10.69

En

PE 6 A 90 C 410 LS 2184
+ Intermediate version 2178

RQ 250/1300 AB 575 DL*
RQV 250-1300 AB 612 DL*
EP/RSV ... B 254 DL

supersedes 3.67
company K H D
engine F 6 L 312
(135 PS)*
150 PS **

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,4	0,3 (0,6)			
	6 15	2,3 - 3,1 14,2 - 15,5				
200	9	3,8 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQ 250/1300 AB 575 DL

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control		
①		Setting point		Test specifications		Setting point		Test specifications		③		
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12	
550	15,7-16,3	550	16	1300	14,0-14,4	500	0	100	6,2-8,1	750	15,8-16,0	
				1320	9,8-14,0			200	4,8-6,8	900	15,1-15,4	
				1350	0 - 9,5			300	2,0-4,5	1100	14,0-14,3	
				1410	0			400	0			

Torque-control travel on flyweight assembly dimension a = 0,65 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
1380	74,5-76,5**	700	1000	67,5-70,5**		
			600	66,5-70,5**		
1280	69,0-71,0*		1000	63,0-66,0*		
			700	64,0-67,0		

Checking values in brackets

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control	
	mm	mm rev/min	4	5	6		rev/min	mm	rev/min	mm
EP/RSV ca.61	300-1250	A8 B254	DL			ca.22	300	6,0	1230	0
	1250	16,0	**				100	19 - 21	1000	0,4-0,6
	1300	11,4					300	5,7-6,3	400	0,4-0,6
	1350	5,7					500	1,4-3,7		
	1320	7,0-10,4	***				680	0 - 1		
②a	1400	2,0- 3,8								
	1550	0 - 1								
EP/RSV 300-1150 A4 B254DL										
ca.73	1150	16,0				ca.28	300	6,0	1130	0
	1200	9,2	**				100	19 - 21	900	0,5-0,7
	1220	6,1					300	5,7-6,3	400	0,7-0,9
	1200	7,0-10,5	***				400	2,9-4,4		
	1250	2,4- 4,6					570	0 - 1		
	1340	0 - 1								

B. Governor Settings

RQV 250-1300 AB 612 D

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control	
	mm	mm rev/min	4	5	6		rev/min	mm	rev/min	mm
ca.66	1300	15,0-18,3	-	-	-	ca.10	100	6,5-8,0	1300	0
	1350	10,0-14,8					250	5,1-7,3	1100	0,4-0,6
	1400	4,6-10,8					400	3,0-4,3	900	0,7-0,9
	1450	0 - 6,7					600	1,6-3,1		
	1530	0					840	0	550	1,1-1,3
②a										

Torque-control travel dimension a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limit Note: changed to .) rev/min	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤	④a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes		rev/min	Control rod travel mm
1300	69,0 - 71,0	1320	1000 700	63,0 - 66,0 64,0 - 67,0					

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 KHD 2,6a
2. Edition

En

PES 3 A 75 C 410/3 RS 1183	EP/RSV 325-1400 A8B471DL	supersedes	1.68
RS 1194	325-1400 A8B252DL	company	K H D
PES 3 A 75 C 410/3 RS 1185	325-1150 A8B474DL*	engine	F 3 L 812 D (50 PS)
RS 1117	325-1150 A8B260DL*		(43,5 PS)*

.. D.. See page 4!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery "D" cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	6,2 - 6,6	0,3	12	5,2 - 5,6	
	9	3,0 - 3,7		9	2,7 - 3,5	
	15	8,5 - 9,5		-	- - - -	
200	9	1,9 - 2,8		9	0,7 - 1,4	

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees	Lower rated speed		3 Torque control	
	mm	mm rev/min	4	5	6		rev/min	mm		rev/min
1	2	3	4	5	6	7	8	9	10	11
			See page 2!							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note: changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1380	50,5 - 52,5 (50,0 - 53,0)	1410	785	44,5 - 47,5 (44,0 - 48,0)			325 (471)	5,5 DL)
1130	45,5 - 47,5	1160	800	44,0 - 47,0			325 (474)	5,5 DL)
								./.

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

EP/RSV 325-1400 A8 B 471 DL

ca.65	1400	10,0	*			ca.21	325	5,5	1380	0		
	1430	7,4					200	19 - 21				
	1450	4,7					325	5,2-5,8			1000	0,4-0,6
	1400	9,8-10,2					500	1,4-3,6			800	0,9-1,1
	1440	3,4- 6,7					700	0 - 1			500	1,2-1,4
	1600	0 - 1										

EP/RSV 325-1150 A8 B 474 DL*

ca.53	1150	10,0	*			ca.21	325	5,5	1130	0		
	1170	8,0					200	19 - 21			800	0,5-0,7
	1190	5,8					325	5,2-5,8			500	0,6-0,8
	1150	9,7-10,2					400	1,5-3,2				
	1200	4,0- 5,6					500	0 - 1				
	1300	0 - 1										

EP/RSV 325-1400 A8 B252 DL

ca.65	1400	10,0	*			ca.21	325	5,5	1380	0		
	1430	7,4					200	19 - 21			1000	0,5-0,7
	1450	4,7					325	5,2-5,8			500	1,4-1,6
	1400	9,8-10,2					500	1,4-3,6				
	1440	3,4- 6,7						0 - 1				
	1600	0 - 1										

EP/RSV 325-1150 A8 B260 DL*

ca.53	1150	10,0	* without auxiliary spring			ca.21	325	5,5	1130	0		
	1170	8,0					200	19 - 21			800	0,5-0,7
	1190	5,8					325	5,2-5,8			500	0,6-0,8
	1150	9,7-10,3					400	1,5-3,2				
	1200	4,0- 5,6					500	0 - 1				
	1300	0 - 1					** with auxiliary spring					

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Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 48 PS / 2650 U/min								
1325	49,0-51,0	1340	785	43,0 - 46,0				1,3
B 46,5 PS / 2800 U/min								
1400	49,0-51,0	1420	785	42,0 - 45,0				1,3
F 46 PS / 2500 U/min								
1250	47,0-49,0	1270	785	42,5 - 43,5				1,3
B 45 PS / 2650 U/min								
1325	47,5-49,5	1340	785	40,5 - 43,5				1,3
B 43,5 PS / 2500 U/min								
1250	45,5-47,5	1270	785	40,0 - 43,0				1,3
B 42 PS / 2300 U/min								
1150	44,0 - 46,0	1170	800	42,5 - 45,5				0,75
B 41,5 PS / 2500 U/min								
1250	44,5 - 46,5	1270	785	38,5 - 41,5				1,3
B 40 PS / 2300 U/min								
1150	42,0 - 44,0	1170	800	40,5 - 43,5				0,75
B 40 PS / 2150 U/min								
1075	43,0 - 45,0	1090	800	43,0 - 46,0				0,75
B 38,5 PS / 2150 U/min								
1075	41,5 - 43,5	1090	800	41,5 - 44,5				0,75
B 37 PS / 2300 U/min								
1150	39,0 - 41,0	1170	800	37,5 - 40,5				0,75
B 37 PS / 2000 U/min								
1000	41,5 - 43,5	1020	800	42,5 - 45,5				0,6
B 36 PS / 2150 U/min								
1075	39,0 - 41,0	1090	800	38,5 - 41,5				0,75
B 34 PS / 2000 U/min								
1000	38,0 - 40,0	1020	800	38,0 - 41,0				0,6

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation rev/min	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 33 PS / 1800 U/min								
900	39,5 - 41,5	910	800	40,5 - 43,5				0,45
B 31 PS / 1800 U/min								
900	37,0 - 39,0	910	800	38,0 - 41,0				0,45
B 28 PS / 1500 U/min								
750	40,0 - 42,0	760	700	41,0 - 44,0				0,2
B 26 PS / 1500 U/min								
750	37,0 - 39,0	760	700	38,0 - 41,0				0,2
A 37 PS / 2300 U/min								
1140	42,5 - 44,5	1150	-	-				
A 34 PS / 2000 U/min								
990	41,5 - 43,5	1000	-	-				
A 31 PS / 1800 U/min								
890	41,0 - 43,0	900	-	-				
A 26 PS / 1500 U/min								
740	41,5 - 43,5	750	-	-				

Note:

Engine output (F, B, A) and speed are indicated on the engine nameplate; adjustment data can be taken accordingly from Section C.

These values have been compiled in accordance with documentation and with the approval of KHD;

Standard setting, pages 1 and 2;
throttled engines, pages 3 and 4.

When setting the reduced full-load deliveries, the dimension a (pages 3 and 4, Section C, Column 8) is to be viewed merely as a pre-setting; the dominant factor in such cases is the delivery as per Columns 2 and 5 with re-use being made of the spring retainer adjusted/readjusted by KHD.

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 BOL 5,0 c

Edition

En

PES 6 A 85 C 320 RS 2275, Y, V RQV 250-1150 AB 594 R
RS 2275 RQV 250-1025 AB 756 R ./.

supersedes

company: Bolinder

engine TD 50 A

Values apply to fuel-injection test tubing
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,6 - 6,0	0,4			2,6 + 0,1*
	6 9	0,4 - 1,0 2,4 - 3,1				
200	9	1,4 - 2,3				

Adjust the fuel delivery from each outlet according to the values in

* In the case of greater dispersion after the delivery-valve spring pre-tension accordingly.

B. Governor Settings

..AB 594 R

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever mm 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever mm 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever mm 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca .68	1150 1200 1250 1330 1440	15,0-18,0 11,3-15,2 7,2-12,2 0 - 7,2 0	-	-	-	ca .14	200 300 400 500 650 800	6,6-8,0 4,0-6,3 2,9-3,8 2,3-3,6 1,0-2,2 0	-	-

Torque control travel a = mm

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C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	58,5 - 60,5	1170	600	53,5-56,5	1250	11,5-16,5)	(ca. RW 6)	(ca. RW 6)
1000	58,5 - 60,5	1170	600	53,5-56,5	1250	11,5-16,5)		
See page 2!								./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.71

A14

A14

BOSCH

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B. Governor Settings

1 Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 68	1025	15,0-18,2	-	-	-	ca. 12	200	6,4-8,0	-	-
	1050	11,2-15,8					300	4,4-6,4		
	1100	4,0-10,6					400	3,7-4,6		
							550	1,9-3,5		
							720	0		
2a	1140	0 - 6,4								
	1200	0								

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat. Note: changed to ...) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
rev/min 1	cm³/1000 strokes 2		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	47,5 - 49,5							
1000	53,0 - 55,0							

Testing of shutoff device:
At $n = 0$, $n = 60$, $n = 1025$ and $n = 1150 \text{ min}^{-1}$ it must be possible with the stop lever to move the control rod to control-rod travel 0 (stop) from the starting and full-load position.

Checking values in brackets

* 1 mm less control rod travel than col. 2

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B. Governor Settings

1 Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
2a										

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat. Note: changed to ...) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
rev/min 1	cm³/1000 strokes 2		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 BOL 5,0 b
Edition 5.71

En

PES 6 A 85 C 320 RS 2188, RQV 250-1150 AB 594 R
Z, Y, X, V

supersedes 6.67
company Bolinder
engine D 50 A

Values apply to fuel-injection test tubing
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0 + 0,1

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,6 - 6,0	0,4			2,6 + 0,1* (max. 2,2-2,9)
	6	0,4 - 1,0				
200	9	2,4 - 3,1				
	9	1,4 - 2,3				

Adjust the fuel delivery from each outlet according to the values in

* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1150 1200 1250 1330 1440	15,0-18,0 11,3-15,2 7,2-12,2 0 - 7,2 0	-	-	-	ca. 14	200 300 400 500 650 800	6,6-8,0 4,0-6,3 2,9-3,8 2,3-3,6 1,0-2,2 0	-	-

Torque control travel a = mm

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C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1000	44,0-46,0	1170	600	42,0-46,0	1250	11,5-16,5 dispersion max 4	(ca. RW 6)	./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1000	31,5-33,5 Z							
1000	35,5-37,5 Y							
1000	37,5-39,5 X							
1000	40,0-42,0 V							

Testing of shutoff device:

At $n = 0$, $n = 1150$ and $n = 1250 \text{ min}^{-1}$ it must be possible with the stop lever to press the control rod out of the starting and full-load position to control-rod travel 0 (stop).

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

En

A19

A19

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 HEN 6,1 1
Edition 3.70

En

PE 6 A 75 C 412 RS 1069 RQV 200-1300 AA 449 D
-1250 AA 450 D ./.

supersedes 11.64
company Henschel
engine. 522 DPF
522 DP ./.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,4 + 0,1

Port closing at prestroke mm (fr. m BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,7 - 5,1	0,4			
	6 15	1,9 - 2,6 10,5 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

..AA 449 D

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	1a	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	7	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	1	rev/min 10	mm 11
ca. 66	1300	15 - 18						ca. 10	100	6,6- 8		1300	0
	1350	10,6-15							200	4,5-6,8		1200	0,1-0,3
	1400	5,8-11,8							400	2,8-3,8		1000	0,7-0,9
	1450	0 - 8,2							600	1,4-2,8		800	1,0-1,2
	1500	0 - 4,6							700	0,4-1,6		600	1,2-1,4
	1550	0							830	0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤		
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4a	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	59 - 61	1300		1000 700 500	60,0-63,0 62,5-65,7 58,5-62,5		To be specified by customer		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

..AA 450 D

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca .65	1250	15 - 18	-	-	-	ca .10	100	7 - 8	1250	0
	1300	10 - 14,2					200	5 - 7	1100	0,2-0,4
	1350	5 - 10,4					400	2,5-3,8	900	0,6-0,8
	1400	0 - 6,4					600	1,2-2,5	700	0,9-1,1
	1490	0					830	0	500	1,0-1,2

1,1

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitation	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to:) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	
1230	56 - 58	1270	1000 700 500	66,0 - 59,0 58,5 - 61,5 56,5 - 60,5				To be specified by customer

Checking values in brackets

*1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = $\frac{\text{rev/min}}{\text{decreasing pressure - in bar gauge pressure (g p)}}$
 $\frac{\text{rev/min}}{\text{increasing pressure - in bar gauge pressure (g p)}}$

Pump/governor	Setting	Measurement	Control rod travel
	(g p)	bar (g p)	mm (1)
			diminution difference

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 DAI 1,8 t
2. Edition

En

PES 4 A 50 C 410 RS 1010 EP/M 60 A 153 DL
RS 1010 EP/M 60 A 156 DL See page 2!
RS 50 EP/M 60 A 155 DL, A 157 DL

supersedes 3.65
company Daimler-Benz
engine OM 636

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	2,2-2,7	0,3			
	9 18	0,8-1,4 4,5-5,2				
200	9	0,6-1,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Torque control travel mm 1	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	Vacuum mm w c 4	Control rod travel mm 5	Vacuum mm w c 6	Control rod travel mm 7	Vacuum mm w c 8	Control rod travel mm 9	Vacuum mm w c 10	Control rod travel mm 11
1,0±0,1	500-480	10	-	-	-	-	490	13,0*	0	13,9-14,1
							530	11,3-12,8	50	13,8-14,0
							600	7,4- 9,6	100	13,4-13,7
							700	2,0- 6,0	220	13,0-13,3
									300	13,0

* See page 2!
control rod travel test (cols 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm ³ /1000 strokes 8
rev/min 1	Vacuum mm wat col 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat col 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat col	
1375	460	30,2-31,2	1300	415	29,7-31,7			
			900	250	29,4-31,4			
			500	75	30,7-33,7			

Checking values in brackets

3.66

B. Governor Settings

EP/M 60 A 156 DL DAI 1,8 t -2-

Torque control travel mm 1	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	vacuum mm w c 4	Control rod travel mm 5	Vacuum mm w c 6	Control rod travel mm 7	Vacuum mm w c 8	Control rod travel mm ** 9	Vacuum mm w c 10	Control rod travel mm 11
0,95	500-480	10	-	-	-	-	330	12,3	150	13,2-13,3
0,05							375	7,6-11,8	200	13,0-13,3
							450	0 - 6,8	240	12,4-12,7
**							500	0 - 3,5	290	12,5

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104 F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full load to idle
rev/min 1	Vacuum mm wat col 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat col 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat col 8	mm cm ³ /1000 strokes 8
1100	290	28,4-29,4	850	200	30,7-31,7	-	-	-
			500	70	29,9-32,9			

Checking values in brackets

* By means of washers, set breakaway at WC 490 such that governor has regulated at WC 520 = 0.2 - 0.6 mm.

** By means of washers, set breakaway at n 1100 and WC 330 such that governor has regulated at WC 360 = 0.2 - 0.6 mm!

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

En

PES 6 A 80 B 412 RS 460

RQ 250/1250 A 349 d

supersedes

company

engine

MAN

D 0836 M1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **1,5 + 0,1** mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,3			
	6 15	1,2 - 2,0 9,8 - 11,2				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control			
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Control rod travel mm 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12		
550	15,6-16,4	550	16	1250	14,5-14,8	540	0	100	6,5-8,1	800	15,8-16		
				1280	7,8-13,2			200	5,3-7,3			1000	15,4-15,7
				1300	3,8-11,2			300	2,9-5,3				
				1320	0 - 8,6			400	0 - 1,9				
				1380	0			440	0				

Torque-control travel on flyweight assembly dimension a = **0,4** mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1230	68,5 - 70,5	650	650 800	68,5 - 71,5 70,0 - 73,0		

Checking values in brackets

28,10.60

Test Specifications Fuel Injection Pumps ② and Governors

En

RS 516, Ay, y RQ 250/1100 A 301 D
PES 6 A 90 B 410 RS 494 A 425 D
RS 2020 y

supersedes 13.4.62
company Daimler-Benz
engine OM 326(172PS) *
(180PS)**
(150PS)***

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 0,1 mm (from BDC) RW 18

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	7,1 - 7,6	0,4			
	6 12	2,1 - 3,3 11,3 - 12,8				
200	9	4,4 - 6,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1000	14,7-15,3	1000	15	1100	14,6- 15	520	0	150	6,4-8,1	400	15,7-16,3
				1120	10 - 14			200	5,5-7,5		
				1140	5 - 11,5			250	4,3-6,4		
				1160	0 - 8,6			300	2,8- 5		
				1220	0			420	0		

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed		
②		③a	③b		⑥		
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes/mm Control rod travel	
1	2	3	4	5	6	7	
RS516 RS494	700	91,0 - 93,0	500	500 1080	90,5 - 93,5 92,0 - 96,0	100	14,9 - 15,9
							./.

Checking values in brackets

B. Governor Settings

DAI 10,8 g 2

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		④		④		⑤		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
700	98,0 - 100,0	500		500	94,5 - 98,5	100	14,9 - 15,9
				1080	98,5 - 102,5		
1000	91,0 - 93,0	500		500	88,5 - 91,5	100	14,9 - 15,9
				700	89,5 - 92,5		

RS516y
RS516Ay
RS2020y

RS516
A 425 D

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		④		④		⑤		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8

En Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 DAI 1,8 w
1. Edition

En

PES 4 A 50 B 410 RS 144,Z EP/MZ 60 A 159 DL
PES 4 A 50 C 410 RS 1010,Z EP/MZ 60 A 160 DL
"Z" See page 2!

supersedes -
company Daimler-Benz
engine OM 636.930 (PKW)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,7 + 0,1$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/mm	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	5	6	7
1000	12	2,2-2,7	0,3			
	9	0,8-1,4				
	18	4,5-5,2				
200	9	0,6-1,2				

Adjust the fuel delivery from each outlet according to the values in:

B. Governor Settings

Pe without .. z

Torque control travel mm	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
0,9+0,1	500-480	10	-	-	-	-	475	12,6*	50	13,4-13,5
							575	8,5-10,3	150	13,2-13,5
							725	2,0- 6,0	350	12,6-12,9

* See page 2!
control rod travel test (cols 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			Idle (stop)** Idle (imbalance)		Control rod travel from full load to idle mm cm ³ /1000 strokes
rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	
1	2	3	4	5	6	7	8	
1700	450	30,2-31,2	1000	205	29,2-31,2	0	0	6,4-6,8
			500	45	29,7-31,7			
			250	ca.620	6,5-8,5			
			dispersion max. 1,5					

Checking values in brackets

8.66

B. Governor Settings

"7"

Torque control travel mm 1	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	Vacuum mm w c 4	Control rod travel mm 5	Vacuum mm w c 6	Control rod travel mm 7	Vacuum mm w c 8	Control rod travel mm ** 9	Vacuum mm w c 10	Control rod travel mm 11
0,9+0,1	500-480	10	-	-	-	-	475 575 700	11,4* 7,1-8,1 2,6-5,4	50 150 350	12,3 12,0-12,3 11,4-11,7

control rod travel test (cols 4-11)
rotational speed 500 rev/min
adjust breakaway (cols 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full load stop screw Test oil temp. 40 C (104 F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full load to idle mm cm ³ /1000 strokes 8
rev/min 1	Vacuum mm wat col 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat col 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat col 8	
1700	450	25,7-26,7	1000 500	205 45	24,2-26,2 24,7-26,7	0	0	5,2-5,6
			250	ca.580 dispersion max.	6,5-8,5 1,5			

Checking values in brackets

* By means of washers, set breakaway at WC 475 such that governor has regulated at WC 500 = 0.2 - 0.6 mm.

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MB 5,1 c

Edition 8.69

En

PES 6 A 70 B 410 RS 64 Z ROV 250 - 1400 A 140 D
PES 6 A 70 B 410 RS 1034,Z RQV 250 - 1500 A 49 D

supersedes DAI 5,1 c
(3.64)
company Daimler-Benz
engine OM 321

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

250 - 1400

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
65±1,5	1400	15 - 17,6				10±1,5	150	7,4- 8	1400	0
	1440	11,6-15					250	5,4- 7,4	1200	0,4-0,6
	1520	4,4- 9,6					400	3,6- 4	800	0,8-1,0
	1600	0 - 4,2					700	1,7-3,4	500	0,8-1,0
	1660	0					950	0		

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed imitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	48,5 - 50,5	1420	500 1400	49,5 - 52,5 49,5 - 53,5	100	mind.7,9		./.

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

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B6

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
66±1,5	1500	15 - 18	-	-	-	10±1,5	150	6,3-8	1000	0
	1540	12 - 16					250	4,2-6,6	900	0,2-0,4
	1620	5,8-11,2					400	3,3-3,8	800	0,5-0,7
	1700	0 - 5,8					600	2,2-3,8	600	0,9-1,1
	1790	0					980	0	400	1,0-1,2

Torque control travel a 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1500	46,5 - 48,5	1520	1000	44,5 - 47,5				
"Z"			500	45,0 - 49,0				
"Z"			1000	48,5 - 51,5				
1500	51,0 - 53,0		500	50,5 - 54,5				

Checking values in brackets

* 1 mm less control rod travel than col: 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = $\frac{\text{decreasing pressure}}{\text{increasing pressure}}$ - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm

En

Testoil-ISO 4113

1

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAI 4,6 a 1
Edition 3.64

En

PES 6 A 70 B 410 RS 64 RQ 250/1400 A 200 D
RS 122 See page 2!

supersedes 1.5.61
company Daimler-Benz
engine OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,9 + 0,1

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6 18	1,2 - 1,9 11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

Checking of slider PRG check ①		Full-load speed regulation Setting point ③				Idle speed regulation Setting point ④				Torque control ⑤	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1300	13,6-14,4	1300	14	1400	13,6- 14			150	6,4-8,2	400	15,8-16,8
				1420	10,5- 14			200	5,5-7,8	500	15,7-16,2
				1450	3 -11,4			300	2,7-5,3	600	15,4-15,9
				1480	0 - 8			400	0 -1,5	1000	14,2-14,6
				1550	0			430	0	1200	14 -14,1

Torque-control travel on flyweight assembly dimension a = 0,6 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/ mm Control rod travel 7
RS64						
1000	43,5 - 45,5	500	500 700 1380	44,5 - 48,5 45,5 - 48,5 43,5 - 46,5	100	mind. 7,9

Checking values in brackets

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12				

Torque control travel on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm Control rod travel
1	2	3	4	5	6	7
RS122						
1000	32,0 - 34,0	500	500 700 1380	35,0 - 38,0 33,5 - 36,5 32,5 - 35,5	100	mind. 7,9

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n rev/min decreasing pressure -- in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure bar	Gauge pressure bar	diminution difference mm (1)

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

E n

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 MB 3,8c

Edition 5.72

En

PES 4 A 80 C 410 RS 2094 EP/RSV 250-1225 A1B424DA (1)
 RS 2206 A1B483DL (1)
 RS2094, RS2244 EP/RSV 300-1200 A1B424DL (2)
 RS 2094Z 300-1200 A1B424DL (3)
 RS2094, RS2244A EP/RSV 300-1325 A1B424DL (4)
 RS 2094Z 350-1200 A1B631DL (5)

supersedes 5.71
 company Daimler-Benz
 engine OM 314
 Ahlmann power shovel
 (65 bhp - 1)
 Stat engine 75PS-2)
 Yale+Towne(63PS-3)
 Stat. engine 78PS-4)
 Yale +Towne(66PS-5)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" u. "D" cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery "C" u. "D" cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	5
1000	9	5,5 - 6,0	0,4	9	4,3 - 4,8	
	6 15	2,2 - 3,0 11,5 - 12,8		6 15	1,8 - 2,6 10,3 - 11,6	
200	6	1,3 - 2,2		9	2,4 - 3,4	

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

250-1225 (1)

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed			4 Control lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	3 Torque control		
			4	5	6				rev/min 10	Control rod travel mm 11	
ca.69	1225	16,0	without auxiliary spring			ca.26	250	6,0	1200	0	
2a	1280	10,4					with auxiliary spring	570			0 - 1
	1320	5,6	250	5,7-6,3							
	1300	6,0-9,5	400	2,0-4,0	500	0,5-0,7					
	1350	2,2-4,7	570	0 - 1							
1450	0 - 1										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational speed limit Note changed to) rev/min 3	3a Fuel delivery Characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	49,0 - 51,0	1230	900	47,5 - 50,5	100	7,9 - 9,9	250	6,0
1180	54,5 - 56,5	1225 *	500	41,0 - 44,0	100	13,2 - 13,8	300	6,0
			800	46,5 - 49,5				
1180	49,5 - 51,5	1225 *	500	41,5 - 44,5	100	13,2 - 13,8	300	6,0
1325	56,0 - 58,0	1370 *	800	46,5 - 49,5	100	13,2 - 13,8	300	6,0
1180	49,5 - 52,0	1225 *	900	44,0 - 47,0	100	13,2 - 13,8	350	6,0

Checking values in brackets

44,5 - 47,5

* 1 mm less control rod travel than col 2

0,5-1,0 mm control rod travel less than column 2

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Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque-control travel rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

300-1200 A1B424D (2, 3)

ca.67	1200	16,0				ca.27	300	6,0		
	1250	11,0	*				100	19-21	**	
	1290	6,4					300	5,7-6,3	as required	
	1270	7,0-10,2					400	3,2-4,6		
	1350	1,0- 4,0	**				580	0 - 1		
	1440	0 - 1								

300-1325 A1B424D (4)

ca.73	1325	16,0				ca.27	300	6,0		
	1370	10,5	*				100	19 - 21		
	1400	6,2					300	5,7-6,3		
	1380	7,5-10,2					400	2,3-4,5	**	
	1420	2,7- 5,0	**				580	0 - 1		
	1520	0 - 1								

350-1200 A1B631D (5)

ca.66	1200	14,0				ca.27	350	6,0		
	1240	9,6	*	without auxiliary spring			200	19 - 21		1180
	1280	4,8					350	5,7-6,3		
	1250	7,0-9,6	**	with auxiliary spring			450	3,0-4,4		700 0,2-0,4
	1300	2,4-4,4					600	0 -1,5		450 0,9-1,1
	1380	0 -1,5								

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

MB 8,0 e

Edition 10.69

En

PE 6 A 90 C 410 RS 2124 RQV 300-1325 AB 689 DL
AB 698 DL
EP/RSV 300-1200 A1 B479DL
300-1100 A1 B530DL

supersedes

company:

Daimler-Benz

engine:

OM 327

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15 \pm 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,4 - 6,9	0,4			
	6 15	2,9 - 3,8 13,8 - 15,3				
200	6	0,2 - 1,0				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQV... AB 689 DL, .. 698 DL

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1325 1380 1440 1500 1590	15,0-18,0 10,5-15,5 5,0-11,0 0 - 7,0 0	-	-	-	ca. 12	100 250 400 600 750	6,3-8,0 5,1-6,8 3,1-4,6 1,0-2,4 0	1325 1100 900 500	0 0,1-0,3 0,4-0,6 0,6-0,8

Torque control travel a = 0,7 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	75,5-77,5	1325: bei 1350 0,5-1,0mm RW less than column 2	900 700 500	73,5-76,5 75,5-78,5 68,5-71,5	100	13,7-14,3	To be specified by customer (→ 698 D)	

Checking values in brackets

* 1 mm less control rod travel than col. 2

B12

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B12

B. Governor Settings

EP/RSV 300-1200 A1 B 479 DL

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1220 1250 1300 1300 1350 1450	16,0 13,2 7,2 5,8-8,8 2,0-5,0 0 - 1	without auxiliary spring			ca.28	300 100 300 450 700	7,5 19,0-21,0 7,2-7,8 3,0-5,2 0 - 1	1200 1000 800 400	0 0,4-0,6 0,9-1,1 0,9-1,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	74,0-76,0	1220	1000 800 500	71,0-74,0 69,0-73,0 65,0-69,0	100	15,7-16,3	300	7,5

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV 300-1100 A 1 B 530 D

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.62	1100 1140 1190 1200 1250 1350	16,0 12,2 6,6 5 - 7 1,8-4,4 0 - 1	without auxiliary spring			ca.27	300 100 300 400 500 650	7,5 19 - 21 7,2-7,8 4,8-6,1 0,6-4,1 0 - 1	1070 800 500	0 0,8-1,0 0,8-1,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
ca.10	mm RW - Carry out adjustment on engine	1120			100	15,7-16,3	300	7,5

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

MB 8,7 h

1. Edition

En

PE 6 A C 410 RS 2124,Z	EP/RSV 300-1100 A 1 B 568 D (1), (2)
RS 2124	EP/RSV 300-1100 A 1 B 479 D (3)
RS 2124	EP/RSV 350- 800 A 1 B 681 D (4)
..D .. RS 2124	EP/RSV 350-1250 A 1 B 690 D (5)
RS 2124	EP/RSV 350-1150 A 1 B 732 D (6)
RS 2124	EP/RSV 350- 900 A 1 B 727 D (7)

supersedes

company

engine

Daimler-Benz

OM 360

(117 PS - 1)

(127 PS - 2)

(150 PS - 3)

(110 PS - 4)

(160 PS - 5-6)

(132 PS - 7)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	6,4 - 6,9	0,4			
	6 15	2,8 - 3,8 13,8 - 15,3				
200	9	3,7 - 4,9				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

EP/RSV 300-1100 A 1 B 568 D (1 - 2)

① Upper rated speed Degree of deflection of control lever rev/min	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			④ Control-lever deflection in degrees	Lower rated speed		③ Torque control rev/min	Control rod travel mm
			4	5	6		rev/min	Control rod travel mm		
1	2	3				7	8	9	10	11
ca. 65	1100 1170 1220	16,0 10,4 4,6	without auxiliary spring			ca. 27	300	6,0	1080	0
②a	1200 1250 1340	4,6-8,8 1,6-4,2 0 - 1					with auxiliary spring			150 300 400 600

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limit Note changed to) rev/min	③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1080	53,5-55,5	1125-1135*	700	53,5-56,5	100	ca. 11,9	300	6,0
			500	54,5-57,5				
1080	67,5-69,5		700	70,5-73,5				
			500	70,0-73,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.74

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B14

B. Governor Settings

EP/RSV 300-1100 A 1 B 479 D (3)

MB 8,7 h

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1100 1150 1170 1150 1200 1280	16,0 9,8 5,4 7,0-11,0 2,3- 4,7 0	*			ca. 21	300 200 300 400 550	6,0 19 - 21 5,7-6,3 2,9-4,3 0 - 1	1080 800 400	0 0,1-0,3 0,4-0,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1080	80,5-82,5	1125-1135*	700 500	81,0-84,0 76,0-79,0	100	ca. 11,9	300	6,0

Checking values in brackets ± 1,0

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV 350-800 A 1 B 681 D (4)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 42	800 850 880 810 870 960	16,0 10,1 5,2 ca. 8,5 ca. 3,0 0,3-1,0	* without auxiliary spring ** with auxiliary spring			ca. 21	350 200 350 450 560	5,5 19 - 21 5,2-5,8 1,7-3,4 0 - 1	800 400	0 0,5-0,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
800	61,0-63,0	820-830*	500 870-890	63,0-66,0 3,0 mmRW	100	ca. 11,9	350	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

En

B15

B.1

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 72	1250	16,0	*			ca. 28	350	6,0	1230	0
	1300	11,6					200	19 - 21		
	1350	5,4					350	5,7-6,3		
ca. 69	1260	ca. 8,6	**				450	2,9-4,5	400	0,5-0,7
	1325	ca. 3,6					620	0 - 1		
②a	1400	0,3-1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1230	70,0-72,0	1265-1275*	900 600 1320	66,5-69,5 65,5-68,5 1335 3,5 mm RW	100	ca. 11,9	350	6,0	

Checking values in brackets

± 1,0

* 1 mm less control rod travel than col. 2

B. Governor Settings

EP/RSV 350-1150 A 1 B 732 D (6)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 59	1150	16,0	*	without auxiliary spring		ca. 24	350	6,0	1130	0
	1190	10,6					200	19 - 21		
	1220	5,8					350	5,7-6,3		
ca. 57	1150	ca. 9,5	**	with auxiliary spring			450	2,6-4,2	500	0,4-0,6
	1220	ca. 3,5					600	0 - 1		
②a	1300	0,3-1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1130	74,0 - 76,0 (73,0 - 77,0)	1165-1175*	800 600	77,5-80,5 (76,5-81,5) 75,5-78,5 (74,5-79,5)	100 1210	ca. 11,9 - 1225 3,5 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

350-900 A 1 B 727 D (7)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	900	16,0	without auxiliary spring			ca. 30	350	6,2	880	0
	1000	9,0					200	19 - 21		
②a	1050	4,0	with auxiliary spring				350	5,9-6,5	500	0,9-1,1
	1000	7,3-10,2					450	1,9-3,9		
	1050	2,7- 6,1					560			
	1160	0,3- 1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤		④a Idle stop	
Test oil temp. 40°C (104°F)											
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
(7 with 727 D)											
880	68,0 - 70,0	920 - 930*	-	-	100	ca. 11,9					
			970-985	4,0 mm RW	970-	985= 4 mm RW					

Checking values in brackets

± 1,0

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤		④a Idle stop	
Test oil temp. 40°C (104°F)											
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAI 8,0 b
Edition 9.67

En

PE 6 A 90 C 410 RS 2124 RQ 300/1175 AB 599 DL
RQ 300/1325 AB 600 DL ./.
RQ 300/1325 AB 658 DL ./.*

supersedes
company: Daimler-Benz
engine: OM 327
(160 PS)
(170 PS)*

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery: cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	6,4 - 6,9	0,4			
1000	6 15	2,9 - 3,8 13,8 - 15,3				
200	6	0,2 - 1,0				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

RQ 300/1175 AB 599 DL

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12				
1100	14,7-15,3	1100	15,0	1175	14,8-15,0	550	0	200	6,8-8,1	650	15,9-16,0				
				1220	9,8-13,5			300	4,4-6,5	780	15,0-15,2				
				1250	6,0-11,5			400	0,5-2,8						
				1300	0 - 7,2			450	0						
				1380	0										

At n = 1200 governor must break away by 0.5-1.0 mm from full load!

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm Control rod travel 7
1150	79,5-81,5 (79,0-82,0)	450	1000	78,0 - 81,0	100	ca. 16 mm RW
			800	77,5 - 81,5		
			500	71,0 - 75,0		

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ 300/1325 AB 600 DL

DAI 8,0b

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1330	14,6-14,9	560	0	200	6,7-8,1	700	15,8-16,0
				1380	9,0-13,2			300	4,2- 6,6	850	15,3-15,6
				1440	0 - 8,6			400	0,4-3,2	1000	14,9-15,1
				1530	0			460	0		

Torque-control travel on flyweight assembly dimension a = **0,35** mm ** Speed regulation At **1 mm less control rod travel**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
1300	75,5 - 77,5 (75,0 - 17,0)	450	1000	73,0 - 76,0	100	ca. 16 mm RW
			700	(72,5 - 76,5)		
			500	74,0 - 78,0 (73,5 - 78,5)		
				68,0 - 72,0 (67,0 - 72,5)		

** At n = 1350 governor must break away by 0.5-1.0 mm from full load!

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ 300/1325 AB 658 DL

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,7-16,3	600	16,0	1325	14,3-14,7	560	0	200	6,7-8,1	700	15,8-16,0
				1370	10,4-14,0			300	4,3-6,7	900	15,1-15,4
				1400	6,4-11,8			400	0,6-3,2	1050	14,7-14,9
				1450	0 - 7,8			460	0		
				1530	0						

Torque-control travel on flyweight assembly dimension a = **0,4** mm ** Speed regulation At **1 mm less control rod travel**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
1300	74,0 - 76,0 (73,5 - 76,5)	450	900	69,5 - 72,5 (69,0 - 73,0)	100	ca. 16 mm RW
			700	71,5 - 75,5 (71,0 - 76,0)		
			450	66,5 - 70,5 (66,0 - 71,0)		

En Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

40

DAI 8,7 b

Edition 3.66

En

PES 6 A 90 C 410 RS 2173 EP/RSV 300-1000 A 4 B 460 DL
EP/RSV 300-1000 A 4 B 373 L

supersedes
company
engine

Daimler-Benz
MB 856) (120PS)
MB 866)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,4	0,4			
	6	2,7 - 3,5				
	15	13,3 - 14,3				
200	9	3,1 - 4,1				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

EP/RSV 300-1000 A 4 B 460 DL

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca. 62	1000	16,0	without auxiliary spring			ca. 27	300	6	980	0		
	1050	10,8							100	19 - 21	800	0,6-0,8
	1090	5,0	with auxiliary spring				300	5,7-6,3	500	1,3-1,5		
	1070	5,2-9,5							400	3,0-4,5		
	1120	2,1-4,2							600	0 - 1		
	1220	0 - 1										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm ³ /1000 strokes	Note: changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
	1	2	3	4	5	6	7	8	9
	980	70,0-72,0	1010-1030	700	81,5 - 84,5	100	20 mm RW	300	6
				500	78,5 - 81,5				./.

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

B20

020

B. Governor Settings

EP/RSV 300-1000 A 4 B 373 L

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 62	1000	16	without auxiliary spring			ca. 27	300	6	980	0
	1040	11,7					100	19 - 21		
	1080	6,1					300	5,7-6,3		
	1080	4 - 8					380	2,5-3,5		
	1120	1,4-3,7					500	0 - 1		
2a	1200	0 - 1	with auxiliary spring						350	1,0-1,6

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								Control rod travel mm	
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	3	4	5	6	7	8	7	8	9
980	71,5 - 73,5	1010-1030				100	21 mm RW	300			6

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a										

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								Control rod travel mm	
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	3	4	5	6	7	8	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

En

PE 6 A 85 C 412	RS 2182	RQ 250/1400	AB671D	(1)
	RS 2182	RQ 250/1400	AB710D	(2)
(D)	RS 2296	RQ 250/1400	AB737D	(3)
PE 6 A 80 C 412	RS 2261	RQ 250/1400	AB704D	(4)
	RS 2261	RQV 250/1400	AB681D	(5)
	RS 2261	RQV 250/1400	AB759D	(6)

supersedes 10.69
company **S t e y r**
engine WD 610 r (120PS-1)
WD 610.23(120PS-2)
WD 610.19
.20(132PS-3)
WD 609 e (150PS-4.5)
WD 609.60(170PS-6)

See page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,5 + 0,1$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
	9	4,1 - 4,5	0,3	9	5,5 - 6,0	
1000	6	1,2 - 2,0		6	2,3 - 3,1	
	15	10,3 - 11,4			- - - -	
200	9	2,9 - 3,7		6	0,1 - 0,7	

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQ .. AB671D (1)

Checking of slider PRG check ①		Full-load speed regulation Setting point ③				Idle speed regulation Setting point ④				Torque control ⑤	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1350	12,5-13,1	1350	12,8	1420	12,4-12,8	510	0	100	6,3-8,1	600	15,8-16,0
				1450	8,0-12,6			200	4,8-6,8	900	14,7-15,0
				1500	0 - 8,0			300	2,3-4,5	1200	12,2-12,5
				1580	0			410	0		

Torque-control travel on flyweight assembly dimension a = $\uparrow, 0$ mm Speed regulation: At 1 mm control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
1380	45,0 - 47,0	500	900	52,0 - 55,0	100	ca. 12 mm RW
			500	50,0 - 53,0		

Checking values in brackets

RQ..AB710D (2) Torque-control travel dimension a = 0,7 mm

B. Governor Settings

RQ..

STE 6,0 d S 2

2

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
550	15,7-16,3	550	16,0	1420	13,4-13,8	510	0	100	6,3-8,1	850	15,8-16,0
Breakaway not before 1420				1450	8,0-12,5			200	4,9-6,9	1000	15,1-15,4
				1500	0 - 8,0			300	2,4-4,5	1150	14,1-14,4
				1580	0			410	0		
RQ..AB737S (3) Torque-control travel a = 0,3 mm											
550	15,7-16,3	550	16,0	1400	14,5-15,0	510	0	100	6,2-8,1	800	15,8-16,0
				1450	7,5-12,6			200	4,7-6,8	950	15,4-15,6

Torque-control travel on flyweight assembly dimension a mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm
1	2	3	3a	4	5	6	7
without 1380	52,5 - 54,5	500		1000	58,5-61,5	100	ca. 13 mm RW
with 1380	46,0 - 49,0			500	51,5-54,5		
without 1380	68,0 - 70,0	500		1000	64,5-67,5	100	ca. 15 mm RW
with 1380	62,5 - 65,5			500	56,0-59,0		
	0,4 kp/cm ²			800	78,0-81,0	100	ca. 20 mm RW
1400	73,5 - 75,5				0 kp/cm ²		
1400	70,5 - 73,5	(with cap!)		500	47,0-50,0		

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ.. AB704D (4)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
550	15,7-16,3	550	16,0	1500	0 - 8	510	0	300	2,0-4,4	950	15,0-15,2
				1580	0			410	0	1100	15,0-15,2
				1400	14,2-14,4			100	6,2-8,1	900	15,9-16,0
				1450	7,4-12,7			200	4,8-6,8	1000	15,5-15,8
				1500	0 - 7,9			300	2,0-4,4	1000	14,6-14,9
				1500	0 - 2,8			410	0	1200	
				1580	0						

Torque-control travel on flyweight assembly dimension a mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm
1	2	3	3a	4	5	6	7

Checking values in brackets

RQV .. 681D (5)

RQV .. 759D (6)

B. Governor Settings

Testoil-ISO 4113

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.65	1400 1440 1520 1600 1660	15,0-17,6 11,6-15,0 4,4- 9,6 0 - 4,2 0	-	-	-	ca.10	150 250 500 700 950	7,4-8,0 5,4-7,4 3,2-4,0 1,7-3,4 0	681 D 1000 600 759 D 1000 600	0 1,0-1,2 0 1,2-1,4

Torque control travel a = 1,1 mm (681D); 1,3 (759D)

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	0,4 kp/cm ² 73,5-75,5		800	0,4 kp/cm ² 78,0-81,0	100	ca.20mmRW		
1400	0,6 kp/cm ² 82,0-84,0		500	0,1 kp/cm ² 47,0-50,0	Change-over point 250-190 U/min			
			800	0,6 kp/cm ² 93,0-96,0				
			500	0 kp/cm ² 47,0-50,0				

Checking values in brackets

* 1 mm less Control rod travel than col 2

Setting of smoke limiter:

- Basic setting of pump (section A) and governor (section B) without smoke limiter.
- Set full-load delivery (delivery data with charge-air pressure) at full-load stop screw of governor; check fuel-delivery characteristics.
- Attach smoke limiter.
- Set start and end of adjustment at guide sleeve (spring seat) of diaphragm housing - $n = 500 \text{ min}^{-1}$: RQ..704D, RQV..759D

Start	- kp/cm ²	:	0.08-0.11	0.05
End	- kp/cm ²	:	0.23-0.26	0.48-0.50
Difference	- mm CRT	:	approx. 2.0	approx. 3.4
- Set full-load delivery at 0 kp/cm² at bell crank of smoke limiter.
- Correct full-load delivery -0.5 ccm at maximum control-rod travel and with corresponding speed of fuel-delivery characteristics using hexagon bolt of housing in smoke limiter, max. charge-air pressure; measure fuel-delivery characteristics with increasing speeds.
- Test automatic control-rod stop (RQV switching point)
- Additional final measurement (with running-in cap - RQ only).

In the case of governor with no smoke limiter:

"without" = without running-in cap
 "with" = with running-in cap

Test Specifications Fuel Injection Pumps and Governors

En

PES 4 A 50 B 410 RS 50, Z EP/M 60 A 102D
 RS 68, Z, Y 102D
 (C) RS1010, Z, Y, X, W 102D, 126D, 149D
 (D) RS1026 102D, 126D
 RS1097 102D
 RS1142 126D

supersedes DAI 1,7i1
 company 3.64
 engine Daimler-Benz
 OM 636 VI U

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	5	6	7
1000	12	2,2 - 2,7	0,2		1,9 - 2,3	
	9	0,8 - 1,4			0,7 - 1,2	
	18	4,5 - 5,2				
200	9	0,6 - 1,1			0,4 - 1,0	

Adjust the fuel delivery from each outlet according to the values in _____

B. Governor Settings

Torque control travel mm	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
1,0+0,1	500-480	10	300	12,3	-	-	430	12,3	40	13,3-13,4
							500	8,3-11,6	75	12,9-13,3
							700	1,5- 4,0	125	12,3-12,7

control rod travel test (cols. 4-11)
 = rotational speed 500 rev/min
 adjust breakaway (cols. 4-5) by means of shims*
 cam adjustment (B 8-9 - C 7-8) by means of shims**

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F)	Fuel delivery characteristics					idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm ³ /1000 strokes
	rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	8
RS 50	1000	300	28,2 - 29,2	750	125	28,7 - 30,7		
RS1010				500	50	30,7 - 32,7		
RS1097								

Checking values in brackets

C. Settings for Fuel Injection Pump with Fitted Governor

①

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

RS50Z, RS68, RS1010X

1000	300	23,7 - 24,7	750	125	24,2 - 26,2			
			500	50	26,2 - 28,2			

RS68Z, RS1010Z, RS1026, RS1142

1000	300	27,2 - 28,2	750	125	27,7 - 29,7			
			500	50	29,7 - 31,7			

RS68Y, RS1010Y

1000	300	25,2 - 26,2	750	125	25,7 - 27,7			
			500	50	27,7 - 29,7			

RS1010W

1000	300	29,2 - 30,2	750	125	28,7 - 30,7			
			500	50	32,2 - 34,2			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

En

C2

C2

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 1,8 i

2. Edition

En

PES 4 A 50 B 410 RS 50 EP/RSV 250-950 A 4/15
RS 68,Z A 4 A 60
RS 1010, Z,Y,X A 4 B 60
-1025 A 4 B 196 L

supersedes 2.64
company Daimler-Benz
engine OM 636

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,2-2,7	0,3			
	9 18	0,8-1,4 4,5-5,2				
200	9	0,6-1,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

250-950

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 57	950 1000 1050 1000 1040 1080 1150	16 10 2 8-11 2,6-6 0 -2,5 0 - 1				ca. 24	250 100 250 340 380 450	6 19-21 5,7-6,3 1,8-3,8 0 -2,6 0	930 420 300	0 0 1,2-1,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
930	28,2-29,2	960-980	RS 1010,	RS 50				
930	23,7-24,7	960-980	RS 1010 Y,	RS 68				
930	27,2-28,2	960-970	RS 1010 Z,	RS 68 Z				
930	22,7-23,7	960-970	RS 1010 X					

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.65

The numbers denote the sequence of the tests

B. Governor Settings

250-1025

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.64	1025	16	without auxiliary spring			ca.26	250	6	1000	0
	1060	12,4					100	19-21	400	0
1100	6,6	250				5,7-6,3	300	1,2-1,8		
2a	1080	7,8-10,4				300			3,9-4,9	
	1110	3,4- 6,6				340			1,5-3,7	
	1220	0 - 1				450	0 - 1			

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ()				Idle		Control rod travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9	
RS 1010	27,7-28,7	1030-1040							

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

En

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 SAM 2,8 a 2,8b

Edition 9.64

En

PES 1 A 80 B 310/3 S 28, 258 RQV 200-500 A 53, 111
2 28, 259
3 61

supersedes 12.52
company Samofa
engine 2 S 108
3 Q108

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	9	3,7 - 4,1	0,3			
	6 15	0,3 - 0,9 10,1 - 11,2				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
66±1,5	500	16,5-19,5				10±1,5	100	6,8-8,8		
	520	10 - 15,5					200	4,6-7		
	560	0 - 6,5					300	2,1-3,8		
	590	0					380	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
480	72,5 - 74,5	500 - 520						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C5

CS

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 SAM 2,8 b
Edition 9.64

En

PES 1 A 80 B 310/3S299,533
2 300,534,1086

EP/RSV 200-750 A 7/25
28,A382

supersedes 9.59
company Samofa
engine S 108

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers (533)

A. Fuel Injection Pump Settings (S299) (534)

Port closing at prestroke 2,15 + 0,1 (S300) 2,7+0,1 (1086)
mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
600	9	3,7 - 4,1	0,3			
	6	0,3 - 0,9				
	15	10,1 - 11,2				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 48	750	16	without auxiliary spring			ca. 21	200	6	730	0
	790	10					100	19 - 21	390	0
	830	2,5	with auxiliary spring				200	5,7-6,3	250	1,2-1,8
	800	6,5-9,5					300	1,6-3,8		
	830	2,8-4					330	0 - 3		
	880	0 - 2					400	0 - 1		
2a	900	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
730	74,5-76,5	760 - 770						

Checking values in brackets

* 1 mm less control rod travel than col 2

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C6

66

①

Test Specifications Fuel Injection Pumps ① and Governors

 VDT-WPP 001/4 DAI 4,6a4
(4,6a 5)

Edition 3.64

En

PES 6 A 70 B 410 RS 64

RQV 250/900/1400 A 186

 supersedes 8.59
company: Daimler Benz
engine: OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6 18	1,2 - 1,9 11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③	rev/min 10	mm 11
65±1,5	1400	15 - 18	52±1,5	900	12,4-15,4	10±1,5	150	6 - 8		
	1440	9,6- 14		950	8 - 13,4		250	4,4-6,6		
	1480	5 - 11		1050	3 - 3,4		350	3,6-4,6		
	1520	0 - 7		1300	3 - 3,4		600	3,6-4		
	1600	0		1420	0		750	1 - 3,6		
						③a	870	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1000	43,5-45,5	1405-1420			100	mind.7,9	900	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAI 4,6 a 3
Edition 3.64

En

PES 6 A 70 B 410 RS 64 RQ 250/1450 A 19 D
RS 64 z /1325 AA 19 D

supersedes 5.63
company: Daimler-Benz
engine: OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6 18	1,2 - 1,9 11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ 250/1450 A 19 D

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control			
①		Setting point		Test specifications		Setting point		Test specifications		③			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12		
1000	14 - 14,8	1000	14,4	1460	14,2-14,4			200	5,8 - 8	400	15,8- 21		
				1480	8,5-14,4			250	4,6- 7			500	15,2-15,7
				1500	3 - 12			300	3 - 5,5			700	14,6-14,9
				1520	0 - 9			380	0 - 2,6			900	14,4-14,5
				1580	0			440	0				

Torque-control travel on flyweight assembly dimension a = $0,5$ mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ -1000 strokes 2	rev/min 3	rev/min 4	cm ³ -1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1000	45,5 - 47,5	500	500	45,5 - 49,5	100	mind. 7,9
			700	46,5 - 49,5		
			1430	46,5 - 48,5		
						./.

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ 250/1325 AA 19 D

②

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1250	13,9-14,7	1250	14,4	1320 1350 1380 1440	14 - 14,4 7 - 14 0 - 9,5 0			150 250 360 410	5,8- 8 3,8- 6 0 - 2,4 0	500 650 800	15,4-15,8 14,8-15,3 14,4-14,6

Torque-control travel on flyweight assembly dimension a

0,5 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel
1000	45,5 - 47,5	500	500	500 700 1325	45,5 - 49,5 46,5 - 49,5 46,0 - 49,0		

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a

mm

Speed regulation At

RQ 250/1450 A 19 D

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel
RS64z 1000	30,5 - 31,5	500	500	500 700 1430	30,0 - 33,0 31,0 - 33,0 31,0 - 33,0	100	mind. 7,9

En Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 20.11.70

En

PES 8 A 75 C 320 RS 2286

RQV 300-800/1500 AB769,
770,771

supersedes

company:

engine:

I H C

DV 550 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1500	10,0	6,2-6,5				
1500	ca. 6,5	max. 3,1 0,1-1,4	(Cyl. 1-4-6-7) (Cyl. 2-3-5-8)			
300	ca. 7,0	min. 2,5 0,1-0,4	(Cyl. 1-4-6-7) (Cyl. 2-3-5-8)			

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

RQV ... 769, 770, 771

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 63	1620 1700 1800 1900	13,8-16,6 7,3-11,8 0 - 5,0 0	ca. 41	800 900 1500 1650	8,4-11,4 5,3- 5,7 5,3-5,7 0	ca. 10	200 350 500 680	6,0-8,0 3,6-5,0 2,0-3,2 0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
200PS- 1500 (RW 10,0 mm)	** 771) 63,5-66,5	1540: 0,1mm- 1625: 2,5-3,5 mm RW ***	700	58,5-61,5	100	8,1-10,4	** ***	governor less than column 2
180PS-	** 769)	1540: 0,1mm- 1625: 2,5-3,5 mm RW ***	700	54,5-57,5	100	8,1-10,4		

Checking values in brackets

* 1 mm less control rod travel than col. 2

C11

C44

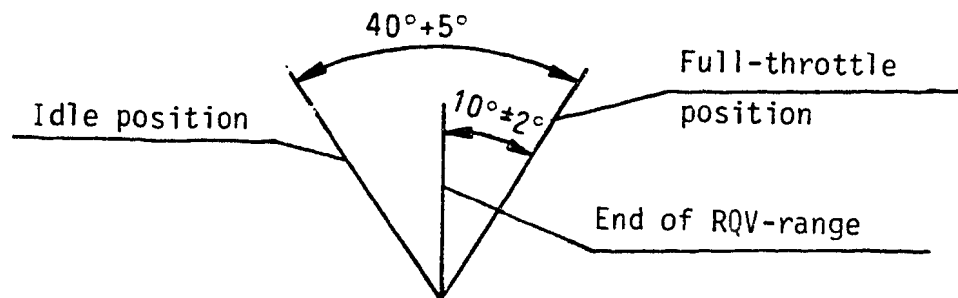
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The special operating conditions result in the following special governor setting: (governor 769, 770, 771) :

1. Calibrate slider, measure sliding-sleeve travel and calibrate plate cam in accordance with WPP 001/4 - 3rd Supplement, illustrations 5 ... 8.
(With picture 5, use is to be made of device as per Fig. 22!)
2. Fit governor cover, attach protractor and control-rod-travel measuring device.
3. Check average rated speed as well as high and low rated speed. Provisionally set engine-speed limitation (Section C, Column 3).

It is to be noted that the control-lever travel from the idle position to full-load speed regulation is $40^\circ + 5^\circ$ and $10 \pm 2^\circ$ from the end of the RQV range to full-load speed regulation (see diagram).



Correct in accordance with Figs. 5-6 and 8 if the above figures are not obtained!

4. Set full-load control-rod travel and delivery; measure fuel-delivery characteristics.
5. Set engine-speed limitation, measure starting delivery and idle.

Sliding-sleeve travel	min ⁻¹	mm CRT
	0 - 200	Start
	400	2.2-2.8
	900	7.4-7.6
	1500	7.4-7.6
	1800-1900	End (11mm)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 MB 1,8r 1

En

PES 4 A 50 C 410 RS 1025	EP/RSV 650-1200 A6B453 (1)	supersedes	MB 1,8r (12.68)
C 320 RS 1143	650-1200 A6B434 (2)	company	Daimler-Benz
C 410 RS 1025	650- 900 A7B510 (3)	engine	OM 686
C 410 RS 1025	650-1200 A5B729 (4)		

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	2,2 - 2,7	0,2			
	9	0,8 - 1,4				
	18	4,5 - 5,2				
200	9	0,6 - 1,1				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

650 - 1200 A5B453 (1)

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	Control rod travel mm 11
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9		
ca. 51	1200	16,0	without auxiliary spring			ca. 29	650	7,5	1180	0
	1240	12,2					150	19,0-21,0		
	1280	7,6	with auxiliary spring				650	7,2 - 7,8	400	1,4-2,0
	1250	10,0-12,0					750	4,0 - 5,5		
②a	1350	3,8- 4,8					1000	0 - 1,0		
	1550	0,3- 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104 F)		⑥ Rotational-speed limitat Note changed to) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
(1) 1180	24,7-25,7 (24,2-26,2)	1200*						

Checking values in brackets

0,2-0,5 * 1 mm less control rod travel than col 2

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B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 51	1200	16,0	without auxiliary spring			ca. 29	650	6,0	1180	0
②a	1250	11,2					with auxiliary spring			100
	1300	5,6	650	5,7-6,3	400	1,4-2,0				
	1270	7,0-10,0	700	4,0-5,0						
	1350	2,8- 4,7	900	0 - 1						
	1500	0,3- 1								

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat. Note: changed to ...) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
rev/min 1	cm³/1000 strokes 2		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
(2) 1180	25,2 - 26,2	1200*						

Checking values in brackets

0,2-0,6 * 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

650-900 A7B510 (3)

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 48	900	16,0	without auxiliary spring			ca. 34	650	7,5	880	0
②a	910	12,4					with auxiliary spring			100
	925	6,6	650	7,2- 7,8						
	915	8,8-11,5	725	2,9- 4,9						
	950	4,4- 5,5	925	0 - 1,0						
	1050	0,3- 1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat. Note: changed to ...) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
rev/min 1	cm³/1000 strokes 2		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
(3) 880	30,7 - 31,7	910						

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

650-1200 A5 B729L (4)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 52	1200 1250 1290	16,0 11,7 7,5	without auxiliary spring			ca. 27	650 250 650 750 860	7,3 19 - 21 7,0-7,6 1,8-4,3 0 - 1	1180 400	0 0,9-1,5
ca. 51	1200 1280 1400	ca. 13,5 ca. 7,0 0,3-1,0				with auxiliary spring				
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
1180	29,2-30,2	1210-1220*						650	7,3
			1280-	1295: 7 mm RW					

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

8. Edition

VDT-WPP 001/4

En

PES 6 A 95 ^C_D 420 LS 3007 EP/RSV 375-1000 A2 B515DR supersedes 7.7.73
3024 EP/RSV 375-1100 A2 B516DR, company Case
599DR, 659DR, 688DR, 695DR, 697DR engine A 504 BDT
EP/RSV 375-1050 A2 B621DR
EP/RSV 375-875 A7 B696P

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	8,4 - 9,0	0,4			
	6 15	4,0 - 5,0 16,5 - 17,8				
200	6	1,4 - 2,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

EP/RSV 375-1000 A2 B515DR

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	2 mm	3 mm rev/min	4	5	6		8 rev/min	9 mm	10 rev/min	11 mm
ca. 39	1020	9,8	without auxiliary spring			ca. 20	375		1000	0
	1050	7,0					150	19 - 21		
2a	1090	3,0	with auxiliary spring				375	5,2-5,8		
	1040	9,2-9,8					450	1,6-3,4		
	1100	3,0-4,2					550	0 - 1		
	1180	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
1 rev/min	2 cm ³ /1000 strokes		4 rev/min	5 cm ³ /1000 strokes	6 rev/min	7 cm ³ /1000 strokes	8 rev/min	9 Control rod travel mm
1000	102,5-104,5 (101,5-105,5)	1040	750	107,5-111,5 (106,5-112,5)	100	13,5-14,5	375	18-22
			650	max. 110,0 (111,0)			cm ³ /1000	
			1100	10,5-17,5 (9,5-18,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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12.74

C16

C16

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca.39	1120	10,8	without auxiliary spring			ca.18	375	5,7	1100	0		
	1160	5,8									150	19 - 21
	1190	2,5	with auxiliary spring				375	5,4-6,0	600	0,2-0,5		
	1140	10,4-11,2									450	1,4-3,3
	1200	3,0-4,5									540	0 - 1
2a	1260	0,3-1,0										

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1100	113,5-115,5 (112,5-116,5)	1140-1155*	800	114,0-118,0 (113,0-119,0)	100	13,5-14,5	375	17-23	
			700	max. 117,0		cm³/1000			
			1200	11,5-19,5 (10,5-20,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca.38	1075	10,9	without auxiliary spring			ca.17	375	5,6	1050	0		
	1150	7,8									150	19 - 21
	1220	4,5	with auxiliary spring				375	5,3-5,9	450	0,5-0,8		
	1090	10,4-11,2									450	1,3-3,2
	1150	2,6-4,0									530	0 - 1
2a	1220	0,3-1,0										

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1050	119,5-121,5 (118,5-122,5)	1090	750	125,5-129,5 (124,5-130,5)	100	13,5-14,5	375	17-23	
			660	max. 128,5		cm³/1000			
			1150	8,5 - 16,5 (7,5 - 17,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

The numbers denote the sequence of the tests

B. Governor Settings

EP/RSV 375-1100 A2 B659DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.43	1120	11,4	without auxiliary spring			ca.19	375	5,9	1100	0
	1150	6,8					150	19 - 21	400	0,6-0,9
	1180	2,8	375	5,6-6,2						
	1140	10,8-11,6	450	1,8-3,6						
	1200	2,0- 3,8	with auxiliary spring				540	0 - 1		
2a	1250	0,3- 1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)									
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	3	4	5	6	7	8	7	8	9
1100	136,0-138,0 (135,0-139,0)	1140-1155*	750	750	143,0-147,0 (142,0-148,0) max. 146,0	100	13,5-14,5	375	17 - 23		
			650	650	20,5 - 28,5 (19,5 - 29,5)						
			1200	1200							

Checking values in brackets ± 1,0

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV 375-1100 A2 B688DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a	1120	9,5	without auxiliary spring			ca.21	375	5,7	1100	0
	1160	5,0					150	19 - 21	500	0,1-0,4
	1190	2,0	375	5,4-6,0						
	1140	9,2-9,8	450	2,0-3,5						
	1200	2,6-4,0	with auxiliary spring				550	0 - 1		
	1260	0 - 1								

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)									
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	3	4	5	6	7	8	7	8	9
1100	94,5-96,5 (93,5-97,5)	1130-1145	800	800	93,5-97,5 (92,5-98,5) max. 96,0	100	13,5-14,5	375	17-23		
			700	700							
			1200	1200	12,5-20,5 (11,5-21,5)						

Checking values in brackets ± 1,0

* 1 mm less control rod travel than col. 2

The numbers denote the sequence of the tests

B. Governor Settings

EP/RSV 375-1100 A 2 B695DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 44	1120	10,0	* without auxiliary spring			ca. 21	375	5,6	1100	0
	1150	6,2					150	19 - 21		
	1180	2,6					375	5,3-5,9		
	1140	9,2-10,2					450	1,7-3,5		
	1200	2,4- 3,9					550	0 - 1		
2a	1260	0,3-1,0	** with auxiliary spring						500	0,2-0,5

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp. 40°C (104°F)									
rev/min 1	cm³/1000 strokes 2	rev/min 3	Note: changed to ... rev/min	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	104,5-106,5 (103,5-107,5)	1140-1155*		750	105,0-109,0 (104,0-110,0)	100	13,5-14,5	375	17-23
				650	max. 108,0				
				1200	9,5- 17,5 (8,5- 18,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

EP/RSV 375-875 A7 B696R

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 58	885	13,6	* without auxiliary spring			ca. 30	375	8,0	875	0
	930	6,8					150	19 - 21		
	960	1,8					375	7,7-8,3		
	930	6,3-8,0					450	2,0-4,7		
	960	2,3-5,3					550	0 - 1		
2a	1030	0,3-1,0	** with auxiliary spring						350	0,2-0,8

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp. 40°C (104°F)									
rev/min 1	cm³/1000 strokes 2	rev/min 3	Note: changed to ... rev/min	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
875	132,0-135,0 (131,0-136,0)	880-895		900	91,5-121,5 (90,5-122,5)	100	13,5-14,5	375	17-23
				940	10,5- 18,5 (9,5- 19,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

The numbers denote the sequence of the tests

EP/RSV 375-1100 A2 B697DR

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.42	1120	10,5	without auxiliary spring			ca.18	375	5,7	1100	0
	1140	9,0					150	19 - 21		
	1180	3,0	375	5,4-6,0						
	with auxiliary spring		450	1,2-3,3						
②a	1140	10,4-11,4	with auxiliary spring			540	0 - 1	500	0,1-0,4	
	1200	2,8- 4,2								
1260	0,3- 1,0									

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1100	125,5-127,5 (124,5-129,5)	1140-1155*	750	126,5-130,5 (125,5-131,5) max. 130,5	100	13,5-14,5	375	17-23	
			650						
			1200	20,5- 28,5 (19,5- 29,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

①

Test Specifications Fuel Injection Pumps ① and Governors

1. Edition

VDT-WPP 001/4

En

PE 6 A 90 D 320 RS 2412	RQV 250-1100 AB861DR (1)
PE 6 A 90 D 321 RS 2413	RQ 250/1300 AB863DR (2)
321	
PE 6 A 90 D 320 RS 2414	RQ 250/1200 AB862DR (3)
	250/1300 (4)

supersedes		
company	Enasa	(1)
engine	9135.30	(2)
	9130	(3)
	9135.02	(4)
	9135.00	(4)

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,1 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQV .. 361 DR (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1135	15,0-18,3	-	-	-	ca. 13	120	8,8-11,0	1135	8,3
	1200	8,8-13,6					250	5,9- 8,3		
	1280	0 - 7,7					350	1,8- 4,4		
	1370	0					480	0	1135	0
									550	0,4-0,6

Torque control travel a = 0,5 mm

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(1) 0,6	bar 86,5-88,5 (85,5-89,5)	1140-1155*	0,6 900	bar 89,0-92,0 (88,0-93,0)	100	mind. 20mmRW		
			0 500	bar 54,0-58,0 (53,0-59,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

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C21

B. Governor Settings

RQ 250/1300 AB 863DR Ppe.2412,2413u.2414 -2-
862 DR (2 u. 4)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	15,7-16,3	550	16,0	1320 1350 1370 1450	14,8-15,4 6,0-13,4 0 -10,8 0	510	0	100 200 300 400	6,2-8,1 4,7-6,8 2,0-4,4 0	600 700	15,8-16,0 15,4-15,7

Torque-control travel on flyweight assembly dimension a: **0,2 mm** Speed regulation At1340-1360= **1 mm less control rod travel**

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
ca.	10 mm RW				→ 863D: 100	18,7-19,3

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ 250/1200 AB862DR (3)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	15,7-16,3	550	16,0	1220 1300 1350 1440	15,0-15,4 5,4- 9,0 0 - 7,5 0	510	0	150 250 350 420	6,4-8,1 4,3-6,5 0,8-3,3 0	600 700	15,8-16,0 15,4-15,7

Torque-control travel on flyweight assembly dimension a: **0,2 mm** Speed regulation At1240-1260= **1 mm less control rod travel**

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
ca.	10 mm RW					
Adjustment test - n = 500 min ⁻¹ - decreasing pressure (pump 2412 with 861 D): Setting 0.38 bar = 0.2-0.3 mm decrease in CRT Measurement 0.25 bar = 1.1-1.3 mm decrease in CRT						

En Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 BOL 5,0 a
Edition 5.72

En

PES 6 A 85 C 320 RS 2160 RQV 200-1200 AB574R (1) supersedes 5.71
S2160, Z,Y,X,V RQV 200-1200 AB743R,751R (2) company Bolinder
S 2160 RQV 200-1400 AB635R (3) engine D 50 A

Values apply to fuel-injection test tubing
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,6 - 6,0	0,3			2,5 ± 0,1* (max. 2,2-2,9)
	6	0,1 - 0,6				
	9	1,8 - 2,5				
200	9	0,9 - 1,6				

Adjust the fuel delivery from each outlet according to the values in

* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

B. Governor Settings

RQV 200-1200 AB 574R, (1)

Testoil-ISO 4113

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1200	18,0-21,0	-	-	-	ca. 10	100	5,6-8,0	-	-
	1250	14,0-18,2					200	3,3-5,5		
	1300	9,7-15,0					300	2,7-3,7		
	1400	0 - 8,0					400	1,8-3,1		
	1520	0					550	0,3-1,5		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	47,7-49,7	1220	500	41,0-44,0	1300	11,5-16,5)		(ca. RW 7)
	see (2)					dispersion max.3)		./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

AB751R (2)
RQV 200-1200 AB743R

BOL 5,0 a

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1200 1250 1300 1380 1470	15,0-18,0 10,8-15,2 6,4-12,0 0 - 6,8 0	-	-	-	ca. 12	100 250 350 450 630	7,0-8,0 4,9-7,1 2,4-4,5 1,6-3,0 0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
	20°	40°			(Column 6-8, see (1))			
Z 1200	34,5 - 36,5	34,0 - 36,0						
Y 1200	39,0 - 41,0	38,5 - 40,5						
X 1200	41,0 - 43,0	40,5 - 42,5						
V 1200	44,0 - 46,0	43,0 - 45,0						

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV 200-1400 AB 635 R (3)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1400 1440 1520 1600 1700	15,0-18,0 12,0-16,0 6,0-11,2 0 - 6,4 0	-	-	-	ca. 12	100 250 300 400 600 810	6,4-8,0 3,2-5,1 2,8-3,8 1,8-3,2 0,3-1,9 0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(3) 1400	47,7-49,7	1420	500	39,5-42,5	1500	11,5-16,5 dispersion max.3	(ca. RW 7)	
<p>Testing of shutoff device: At $n = 0$, $n = 60$, $n = 1200$ and $n = 1400$ min⁻¹ it must be possible with the stop lever to move the control rod to control-rod travel 0 (stop) from the starting and full-load position.</p>								

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 SCL 4,3 a
Edition 2.67

En

PES 4 A 75 C 410 RS 1104 * EP/RSV 250-1000 A1B 426D
PES 4 A 70 C 410 RS 1193**
75 *

supersedes 11.65
company (SCHL 4,3a)
engine Schlüter
SD 100 W4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC) 7 0**

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	6,5- 7,0	0,4			
200	6	1,2- 2,3				
	18	10,9-11,9				
	6	0,6- 1,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3				7	8	9	10	11		
ca. 51	1000	12,0	without auxiliary spring			ca. 22	250	5,5	980	0		
	1030	8,4							100	19 - 21	950	0
	1050	5,4	with auxiliary spring				250	5,2-5,8	800	0,3-0,5		
2a	1030	5,7-9,4							350	2,8-4,1	700	0,5-0,7
	1060	3,8-5,4							450	0 -2,1	350	0,5-0,7
	1100	1,0-3,2							550	0 - 1		
	1200	0,3-1,0										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)	Fuel delivery characteristics		Starting fuel delivery Idle		Idle stop	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
980	45,0 - 47,0	1020	700	46,5 - 49,5	100	19 mm RW	250	5,5
			500	45,0 - 48,0				./.

Checking values in brackets

* 1 mm less control rod travel than col 2

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D3

03

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,1 + 0,1$ mm (from BDC) $7,5 \varnothing$ *

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,7 -	0,3			
200	6	1,9 - 2,6				
	15	10,4 - 11,5				
	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control				
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm			
1	2	3	4	5	6	7	8	9	10	11			
ca. 51	1000	12,0	without auxiliary spring			ca. 22	250	5,5	980	0			
2a	1030	8,4				with auxiliary spring				100	19 - 21	950	0
	1050	5,4								250	5,2-5,8	800	0,3-0,5
	1030	5,7-9,4	350	2,8-4,1	700					0,5-0,7			
	1060	3,8-5,4	450	0 - 2,1	350					0,5-0,7			
	1100	1,0-3,2	550	0 - 1									
	1200	0,3-1,0											

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to)		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
980	50,5 - 52,5	1010-1020	900	49,5 - 52,5	100	20 mm RW	250	5,5	
			700	51,5 - 54,5					
			500	48,0 - 51,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

En

D4

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

En

PES 4 A 85 C 410 RS 2246 EP/RSV 250-1100 A1 B168L 289 L
 PES 4 A 90 C 410 RS 2231 EP/RSV 250-1100 A1 B154DL
 B288DL
 B289L

supersedes
 company
 engine

Kaelble
 MD 215 v -

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

**

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 8,5 Ø cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery 9 Ø cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5		7	5,9 - 6,4	
	6 15	1,3 - 2,1 12,3 - 13,1		6 12	2,3 - 3,1 9,5 - 10,4	
200	6	0,1 - 0,9		9	3,2 - 4,1	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

.. A 1 B 168, 289,

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever mm 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 64	1100	16,0	without auxiliary spring			ca. 27	250	6,0	1080	0
	1150	12,1					100	19 - 21		
2a	1200	6,8	with auxiliary spring				250	5,7-6,3	400	0
	1170	8,5-11,0					350	1,1-3,5		
	1250	7,8- 3,5					450	0 - 1	300	1,2 - 1,8
	1350	0 - 1								

Testoil-ISO 4113

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	Note changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
		1120							

** Port closing difference between control-rod travel
 9 mm and 21 mm = 3-4° (8,5 Ø) camshaft,
 12 mm and 21 mm = 4,5-5,5° (9 Ø) camshaft.

Checking values in brackets

* 1 mm less control rod travel than col 2

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The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	Control rod travel mm 11
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9		
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat. Note: changed to ... rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
rev/min 1	cm³/1000 strokes 2		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
(2a)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

..A 1 B 134 DL, 288 DL

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	Control rod travel mm 11			
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9					
ca. 64	1100	16,0	without auxiliary spring			ca. 27	250	6,0	1080	0			
	1150	12,1				with auxiliary spring				100	19 - 21	900	0,6-0,8
	1200	6,8	with auxiliary spring							250	5,7-6,3	500	0,9-1,1
	1170	8,5-10,5											400
	1260	1,0- 4,0					600	0 - 1					
(2a)													

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat. Note: changed to ... rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
rev/min 1	cm³/1000 strokes 2		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
(2a)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1A and Governors

40

VDT-WPP 001/4
Edition 9.5.72

En

PES 4 A 85 C 320/3 RS 2284	EP/RSV 250-1250 A 1 B 279	supersedes	1.7.69
PES 6 A 85 C 320/3 RS 2285	200-1250 A 1 B 525	company	21.1.71
PES 6 A 85 C 320/3 RS 2260	B 279	engine	Motori VM
PES 4 A 85 C 320/3 RS 2338	350-1250 A 1 B 279		VM 104 SU, 954 SU
PES 6 A 85 C 320/3 RS 2339			VM 106 SU, 956 SU

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,7+0,1$ RW 9 mm (from BDC) 2260
 $3,0+0,1$ RW 9 2284/85, 2338/39

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,9 - 5,5	0,4			
	6 15	1,3 - 2,1 12,3 - 13,1				
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

250-1250

1 Upper rated speed rev/min			Intermediate rated speed			4 Control-lever deflection in degrees			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3				8	9	10	11	
ca. 70	1250	16,0	without auxiliary spring			ca. 26	250	5,5	1200	0
	1300	11,0					100	19 - 21		
	1350	4,2					250	5,2-5,8		
2a	1330	4,0-9,0	with auxiliary spring			300	4,0-5,0	600	0	
	1380	1,0-3,4				430	0 - 1	300	1,2-1,8	
	1440	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5a Idle stop	
Test oil temp 40°C (104°F)	Note changed to)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	3	4	5	6	7	8	9		
1230	1270			100	9,9-11,9 2338/39	200	6,0 525		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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The numbers denote the sequence of the tests

200-1250

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 70	1250	16,0	*			ca. 25	200	6,0	1230	0
	1300	11,0					100	19 - 21	400	0
	1340	6,0								
	1340	3,5-8,0								
	1380	0,8-3,5					**	200	5,7-6,3	250
1460	0 - 1	300	2,2-3,9							
2a						420	0 - 1			

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

350-1250

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 70	1250	16,0	*			ca. 27	350	6,0	1230	0
	1300	11,0					200	19 - 21	500	0
	1350	4,2								
	1320	6,2-9,6								
	1360	2,1-5,0					**	350	5,7-6,3	380
1450	0 - 1	420	1,5-2,6							
2a						500	0 - 1			

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 STE 6,0h
Edition 12.71

En

PE 6 A 85 C 412 RS 2303
(D)

RQ 250/1400 AB741DL (2)
RQV 250-1400 AB681DL (1)
RQV 250-1400 AB804DL (2)

supersedes
company Steyr
engine 610.72
(170 PS - 1)
610.60,69,70
(150 PS - 2)

For full-load setting pay attention to "without" or "with" running-in capsule (RQ governor). Refer to page 3 for smoke-limiter setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery "C" cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery "D" cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5	0,4	9	4,1 - 4,5	
	6 15	1,3 - 2,1 12,3 - 13,1		6	0,6 - 1,4	
200	6	0,1 - 0,9		9	1,4 - 2,2	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQ .. AB 741 DL (2)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Control rod travel mm 9	Test specifications rev/min 10	rev/min 11	Control rod travel mm 12
550	15,7-16,3	550	16,0	1400	14,3-14,5	510	0	100	6,2-8,1	1000	15,7-16,0
				1450	8,0-12,6			200	4,9-6,8	1200	14,7-15,0
				1500	0 - 7,7			300	2,3-4,5		
				1580	0			410	0		

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1400	72,5-74,5 without		0,4	kp/cm ²		
1400	68,5-71,5 with		800	71,5-74,5		
			0	kp/cm ²		
			500	58,0-61,0		

Checking values in brackets

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 65	1400 1440 1520 1600 1660	15,0-17,6 11,6-15,0 4,4- 9,6 0 - 4,2 0	-	-	-	ca. 10	150 250 500 700 950	7,4-8,0 5,4-7,4 3,2-4,0 1,7-3,4 0	-	-

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
0,4 1400	kp/cm ² 78,0-80,0	1430	0,4 800 0 500	kp/cm ² 69,0-72,0 kp/cm ² 56,0-59,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

RQV .. AB 804 DL (2)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 65	1400 1440 1520 1600 1660	15,0-17,6 11,6-15,0 4,4- 9,6 0 - 4,2 0	-	-	-	ca. 10	150 250 500 700 950	7,4-8,0 5,4-7,4 3,2-4,0 1,7-3,4 0	1400 900 600	0 0,1-0,3 0,8-1,0

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
0,4 1400	kp/cm ² 72,5-74,5	1430	0,4 800 0 500	kp/cm ² 71,5-74,5 kp/cm ² 58,0-61,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

Setting of smoke limiter:

1. Basic setting of pump (Section A) and governor (Section B) without smoke limiter.
2. Set full-load delivery (quantity data with charge-air pressure) at full-load stop screw of governor:
Test fuel-delivery characteristics.
3. Attach smoke limiter.
4. Set start and end of adjustment at guide sleeve (spring seat) of diaphragm housing:

<u>with...741 DL</u>	Start = 0.18 kp/cm ² End = 0.28 kp/cm ²) difference approx. 0.5 mm control-rod travel
with..681 DL	Start = 0.16 kp/cm ² End = 0.28 kp/cm ²) difference approx. 0.3 mm control-rod travel
with..804 DL	Start = 0.18 kp/cm ² End = 0.27 kp/cm ²) difference approx. 0.9 mm control-rod travel
5. Set full-load delivery with 0 kp/cm² at bell crank of smoke limiter.
6. Correct full-load delivery - 0.5 cm² with maximum control-rod travel and at corresponding speed of fuel-delivery characteristics at hexagon bolt of housing in smoke limiter, max. charge-air pressure; measure fuel-delivery characteristics with increasing speeds.
7. Test automatic control-rod stop, measure switching point
 $n = 130 - 200 \text{ min}^{-1}$ (RQV governor)
8. Additional final measurement with disposable capsule (RQ governor)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
21.1.71

En

PES 4 A 85 C 320/3 RS 2284
PES 6 A 85 C 320/3 RS 2285

EP/RSV 250-1250 A 1 B 279
200-1250 A 1 B 525

supersedes 1.7.69
company Motori VM
engine VM 104 SU, 954 SU
VM 106 SU, 956 SU

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 + 0,1 mm (from BDC) bei RW9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,9 - 5,5	0,4			
	6	1,3 - 2,1				
200	15	12,3 - 13,1				
	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

250 - 1250

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 70	1250	16,0	without auxiliary spring			ca. 26	250	5,5	1200	0
	1300	11,0					100	19 - 21	600	0
	1350	4,2	250	5,2-5,8	300		1,2-1,8			
	1330	4,0-9,0	300	4,0-5,0						
2a	1380	1,0-3,4	with auxiliary spring			430	0 - 1			
	1440	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm ³ /1000 strokes	Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
	1	2	3	4	5	6	7	8	9
	1230	53,0-55,0	1270			100	7,4-8,9		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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B. Governor Settings

1 Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 70	1250	16,0	without auxiliary spring			ca. 25	200	6,0	1230	0
	1300	11,0					100	19 - 21		
	1340	6,0	with auxiliary spring				200	5,7-6,3	400	0
	1340	3,5-8,0					300	2,2-3,9	250	1,2-1,8
2a	1380	0,8-3,5					420	0 - 1		
	1460	0 - 1								

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat Note: changed to ... rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
rev/min 1	cm³/1000 strokes 2	3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	53,0 - 55,0	1270			100	7,4-8,9	200	6,0

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

1 Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
2a										

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat Note: changed to ... rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
rev/min 1	cm³/1000 strokes 2	3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4
Edition 7.9.73

En

PES 3 A 85 C 410 RS 1228	EP/RSV 250-1000 A1 B12, 46	supersedes	14.2.67
PES 4 A 85 B 410 RS 556	EP/RSV 200- 900 A1 A316	company	9.4.70
PES 2 A 85 C 410 RS 2032		engine	Motovi VM
PES 3 A 85 C 410 RS 2052	EP/RSV 250- 900 A1 B316,273		VM 60 DA
PES 3 A 85 D 410/3 RS1285	EP/RSV 250-1000 A1B1068		VM 45 DA
PES 4 A 85 D 410/3 RS2410	A1B1059		

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **3,7 + 0,05** mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" u. "D" cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	6,0 - 6,4	0,4			
	5 16	2,0 - 2,8 - - - -				
200	6	1,0 - 1,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

200-900 A1 A316

① Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			④ Control lever deflection in degrees	Lower rated speed		③ Torque control		
	mm	mm rev/min	4	5	6		rev/min	mm	rev/min	mm	
1	2	3	4	5	6	7	8	9	10	11	
ca. 47	900	16,0	*			ca. 21	200	6	880	0	
	930	10,4					100	19 - 21			400
	980	5,5					200	5,7-6,3			
	950	8,8-11,6	**	250	4,2-5,2		250	1,2-1,8			
	1000	2,0- 4,0		450	0 - 1						
1100	0 - 1										
ca. 50	500	16,0	* without auxiliary spring			ca. 24	250	8	880	0	
	950	10,0					100	19 - 21			
	1000	5,4					250	5,7-6,3	400	0	
	980	5,6-9,6					350	1,0-3,4			
	1050	0,9-3,2					** with auxiliary spring	450	0 - 1	300	1,2-1,8
	1150	0 - 1									

Port closing difference between control-rod travel 13 mm and 21 = 6-7,5° camshaft.

Testoil-ISO 4113

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D16

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 55	1000	16,0	*			ca. 25	250	6,0	980	0
	1050	11,5					100	19 - 21		
	1100						250	5,7-6,3		
	1060	9 - 11	**	350	1,1-3,4		290	1,2-1,8		
	1140	1,0-3,5		440	0 - 1					
1220	0 - 1									

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								Control rod travel mm	
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	3	4	5	6	7	8	7	8	9
ca.	10 mm RW		- 910					200			6
	Carry out adjustment		1020					250			6 (→ 316)
											./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

250...1000 A 1 A oder B 11,12,46

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 55	1000	16	* without auxiliary spring			ca. 25	250	6	980	0
	1060	10,5					100	19 - 21		
	1100	5,7					200	7,6-8,8		
	1100	3,5-7,8	** with auxiliary spring	300	3,7-4,8		300	1,2-1,8		
	1150	0,5-3,2		450	0 - 1					
1250	0 - 1									

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								Control rod travel mm	
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	3	4	5	6	7	8	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4
Edition 5.12.72

En

PES 6 A 90 D 410 LS 2377

EP/RSV400-1250 A2 B640DL
RQV 300-1100 AB 838 DL ./.

supersedes 8.8.72
company G M C - USA
engine DH 478

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

End of pump delivery

4,0 + 0,1

mm (from BDC)

Mark on drive 24° from perpendicular!

Rotational Speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,0 - 5,5	0,4			
	6 12	2,1 - 3,1 7,8 - 8,8				
200	9	2,2 - 3,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

EP/RSV ... 640 DL

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 48	1250	16,0	without auxiliary spring			ca. 21	400	6,0	1230	0
	1300	11,6					150	19 - 21		
	1350	6,8	400	5,7-6,3						
2a	1340	6,2-9,2	with auxiliary spring				550	2,2-4,0	500	0,8-1,0
	1400	2,0-3,7					740	0 - 1		
	1540	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 4a Idle stop	
Test oil temp 40°C (104°F)	Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	3	4	5	6	7	8	9		
1250	1270	500	71,0-73,0 (70,5-73,5)	60,5 - 63,5 (60,0 - 64,0)	8,9-9,9	400	7,25-11,25		

Checking values in brackets

* 1 mm less control rod travel than col 2

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B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	1430 1500 1600 1730	15,0-17,8 10 -14 1,5- 8,1 0	-	-	-	ca. 10	200 400 600 890	7,1-8,0 2,5-4,2 1,6-3,0 0	1400 650	0 1,0-1,2
						(3a)			400 1000 1430	1,8-2,6 4,5-4,9 8,3

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	69,5-71,5	1130	1200 800	66,0-69,0 60,5-63,5	Change-over point 180-250			
					300	12,25-16,25		
					100	89,25-99,25		
					1510	23,25-31,25		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = _____ rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm

En

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4
Edition 16.9.70

En

PES 8 A 75 C 320 RS2286

RQV 300-1500 AB726D, 724D, 722D

supersedes 20.1.70

See page 4!

RQ 300/1500 AB727D, 725D, 723D

company 3.3.70

1 - 8 - 7 - 3 - 6 - 5 - 4 - 2

engine 17.3.70

22.7.70

I H C

DV 550/460

(200, 180, 160 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

End of pump delivery RW 10,0
Port closing at prestroke 3,95 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0	6,2 - 6,5				
1500	ca. 6,5	max. 3,1 0,1 - 1,4	(Cyl. 1-4-6-7) (Cyl. 2-3-5-8)			
300	ca. 7,0	min. 2,5 0,1 - 0,4	(Cyl. 1-4-6-7) (Cyl. 2-3-5-8)			

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

RQV .. AB726DR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1600 2000	15,0-18,2 0	-	-	-	ca. 10	250 400	6,5-8,2 2,9-4,5	1500	0
ca. 65	1500 1600 1700 1940	15,0-17,6 10,0-14,0 4,6-10,4 0					500 650 360	2,3-3,3 1,1-2,1 0	1200 1000 700	0 0,7-0,9 1,0-1,2

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1500 (RW)	53,5-65,5 10,0	1540: 0,1mm 1625: 2,5-3,5 mm less than column 2	1000	59,5-63,5	100 300 (Cyl. 1-4-6-7)	8,1-10,4 1,4- 1,8		

Checking values in brackets

* 1 mm less control rod travel than col. 2

E1

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E 1

B. Governor Settings

RQV .. AB8722DR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1600	15,0-18,2	-	-	-	ca. 10	250	6,5-8,2	1500	0
	2000	0					400	2,9-4,5		
ca. 65	1500	15,0-17,6					500	2,3-3,3	1200	0
	1600	10,0-14,0					650	1,1-2,1	1000	0,6-0,8
	1700	4,6-10,4					860	0	700	0,9-1,1
	1940	0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(180PS) 1500	59,0-61,0 (RW 9,5)	1540: 0,1mm- 1625:2,0-3,0 mm ** less than column 2	1000	54,0-58,0	100	8,1-10,4		
					300	1,4 -1,8 (Cyl. 1-4-6-7)	ca. RW	5,3

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1600	15,0-18,2	-	-	-	ca. 10	250	6,5-8,2	1500	0
	2000	0					400	2,9-4,5	1300	0,4-0,6
ca. 65	1500	15,0-17,5					500	2,3-3,3	1000	0,5-0,7
	1600	10,0-14,0					650	1,1-2,1	700	0,5-0,7
	1700	4,6-10,4					860	0		
	1940	0								

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(160PS) 1500	49,0-51,0 (RW 8,4)	1540: 0,1mm- 1625:1,5-2,5 mm **	1000	45,0 - 48,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,6-20,4 (VH ca. 49°)	650	20,0	1500 1600 1650 1770	17,8-18,2 7,0-13,6 0 -10 0	590	0	100 200 300 400 530	9,8-12,6 8,4-11,5 6,2-9,5 2,8-6,2 0	700 900 1100	19,9-20,0 19,2-19,5 18,3-18,6
** 1540 = max.0,1 mm - 1625=2,5-3,5mm RW less than full load											

Torque-control travel on flyweight assembly dimension a = **0,45** mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes /mm 7
(200PS) 1500	63,5-65,5 (RW 10,0)		1000	59,5 - 63,5	100	8,1 - 10,4
** Breakaway					300	1,4 - 1,8 (Cyl. 1-4-6-7)

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,6-20,4 (VH ca. 49°)	650	20,0	1500 1600 1650 1770	17,6-18,0 7,0-13,7 0 -10 0	630	0	100 200 300 400 530	9,8-12,6 8,4-11,5 6,2- 9,5 2,8- 6,2 0	700 900 1100	19,9-20,0 19,2-19,5 18,2-18,6
** 1540 =max.0,1 mm- 1625=2,0-3,0mm RW less than full load											

Torque-control travel on flyweight assembly dimension a = **0,5** mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes /mm 7
(180PS) 1500	59,0-61,0 (RW 9,5)		1000	54,0 - 58,0	100 300	8,1 - 10,1 1,4 - 1,8
					***	1-4-6-7) (ca. RW5,3)

En Checking values in brackets

B. Governor Settings

RQ .. AB 725 DR

-4-

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12				
650	19,6-20,4 (VH ca.49°)	650	20,0	1500	18,3-18,6	620	0	100	9,7-12,6	1100	19,7-20,0				
	Abregelbeginn: 1540 = max.0,1 mm-			1600	7,6-14,6			200	8,3-11,4	1250	19,0-19,4				
	1625 = 1,5-2,5 mm			1670	0 - 9,2			300	6,1- 9,2	1350	18,6-18,9				
	RW less than full load			1780	0			400	2,6- 6,0						
								520	0						

Torque-control travel on flyweight assembly dimension a - 0,35 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
1500	49,0 - 51,0 (RW 8,4)		1000	45,0 - 48,0 (ca.RW 9,1)	100	8,1 - 10,4
					300	1,4 - 1,8 (Cyl. 1-4-6-7) (ca.RW 5,3)

Checking values in brackets

Supply pressure = 1.5 bar
now = 2.5 bar - can be seen from groove at hexagon socket of overflow valve!

Further test instructions:

1. With vehicle stopped, check whether stop is reliably attained with shutoff device from full-load setting. It is to be ensured in the process that the pin of the control-rod stop does not move back as well.
2. Set shutoff device to 0.5 mm - 1.0 mm.
3. In start-of-delivery setting of cyl. 1 (on drive) and with CRT 10.0 (200 bhp), 9.5(180 bhp) and 8.4 (160 bhp) effect movement with fixing device (press down pin in doing so) until pin is in camshaft groove. Tighten device and check again; correct if necessary. Then drill and pin pump housing. In this position, set coupling such that the jaws are exactly horizontal; in doing so, check whether coupling turns easily.

Caution: Fixing device must not be used when tightening coupling!

4. After setting idle delivery, check locking and unlocking (between 200 and 250).

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

En

PE 8 A 90 C 410 LS 2190

RQ 250/1400 AB 575 DL (1)
250/1300 (2)

supersedes

company:

KHD

engine:

FB 8 L 312
(200 PS-1)
(180 PS-2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,4	0,4			
200	6	2,3 - 3,1				
	15	14,2 - 15,5				
	9	3,8 - 4,6				

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

250/1400

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications ④		Setting point		Test specifications ⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1300	13,6-14,4	1300	14,0	1400	13,8-14	520	0	150	6,2-8,1	700	15,8-16
				1440	4 - 12			250	4,2-6,5	850	15,2-15,5
				1460	0 - 9,4			350	0,8-3,2	1000	14,2-14,6
				1520	0			420	0		

Torque-control travel on flyweight assembly dimension a = 0,6 mm 0,05 mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
1380	74,5 - 76,5					

Checking values in brackets

B. Governor Settings

250/1300

KHD 10,0

-2-

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12				
550	15,7-16,3	550	16,0	1300 1320 1350 1420	14,0-14,4 9,8-14,0 0 - 9,5 0	500	0	100 200 300 400	6,2-8,1 4,8-6,8 2,0-4,5 0	700 900 1050	15,8-16,0 15,1-15,4 14,4-14,6				

Torque-control travel on flyweight assembly dimension a - 0,5 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
1280	74,5 - 76,5						

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12				

Torque-control travel on flyweight assembly dimension a mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

20.11.65

En

PES 6 A 85 C 320 RS 2166

EP/RSV 250-1000 A2 B 330 R

supersedes
company Volvo-Penta
engine TD 5260

Testing with "B" leads !

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	5,6 - 6,0	0,3			2,5 ± 0,1 (max. 2,2-2,9)
	6	0,1 - 0,5				
	9	1,4 - 2,1				
200	9	0,8 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev./min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3				7	8	9	10	11
ca. 37	1000	16,0	without auxiliary spring			ca. 17	250	6	980	0
	1050	12,2					100	19 - 21	460	0
	1100	7,2					250	5,7-6,3	320	1,2-1,8
	1100	4,8-8,7					350	3 -4,4		
	1180	1,1-3,1					450	0 -2,2		
1300	0 - 1	550	0 - 1							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)	Note changed to)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	3	4	5	6	7	8	9		
900	1010-1030	500	50,0-53,0	100	mind. 10mmRW	250	6		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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E7

Reverse side of pump 32166 with governor B 330 R

Setting of low idle:

$n = 250 = 5.5-11.5 \text{ cm}^3/1000 \text{ strokes (approx. 7 mm CRT)}$

Scatter max. 1.0 cm^3 ; given greater scatter, adjust initial tension of valve spring accordingly (Section A, Column 6)

High idle:

$n = 1070 = 9.5 - 14.5 \text{ cm}^3/1000 \text{ strokes (approx. 7 mm CRT)}$
Scatter max. 3.0 cm^3

Testing of shutoff device:

With the pump off and at $n = 60$ or $n = 980$ it must be possible to move the control rod with the stop lever from the starting and full-load position to CRT 0 (Stop).

Testoil-ISO 4113

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

En

PE 4 A 90 C 412 RS 2165

EP/RSV 200-1000 A1 B454 DL

supersedes

EP/RSV 200-1200 A1 B455 DL

company

Renault

Values apply to fuel-injection test tubing

engine

124 V

1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	7,4 - 7,9	0,4			
	6 15	2,9 - 3,7 16,0 - 17,3				
200	6	1,1 - 2,0				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

..A1 B 454 DL

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.47	1010	16,0	without auxiliary spring			ca.16	200	6,0	990	0
	1030	12,2					100	19 - 21		
	1050	7,0	with auxiliary spring				5,7-6,3	700	0,6-0,8	
	1040	7,5-11,0					400			2,2-4,2
	1100	2,6- 4,0		620	0 - 1					
2a	1200	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit	3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9
1000	72,0-74,0	1020	800 500	78,5-81,5 73,5-76,5	1030	1,9-3,9	200	6,0
								./.

Checking values in brackets

* 1 mm less control rod travel than col 2

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E9

E9

The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control		
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11	
ca. 72	1220 1250 1280	12,0 9,3 6,3	without auxiliary spring			ca. 29	200	6,0	1200	0	
②a	1250	8,6-10,0					with auxiliary spring				100
	1320	3,0- 4,5	200	5,7-6,3	500	1,1-1,3					
	1450	0 - 1	450	1,3-3,8							
						680	0 - 1				

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat. Note: changed to) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
rev/min 1	cm³/1000 strokes 2		rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7		rev/min 8	Control rod travel mm 9
1200	73,0-75,0	1020	1000	71,5-74,5	100	12,9-13,9	200	6,0	
			800	78,0-82,0	200	1,6- 2,2			
			500	73,0-77,0	1250	2,4- 4,4			

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = _____ rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = _____ bar	Gauge pressure = _____ bar	mm (1)

Notes:

(1) when n = _____

rev/min and gauge pressure = _____

bar (= maximum full-load control rod travel)

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 19.8.65

En

PE 2 A 85 C 320/3 RS 2152
PE 3 A 85 C 320/3 RS 2146
PE 4 A 85 C 420/3 RS 2152

EP/RSV 250-750 A1 B438R

supersedes
company
engine

Vendeuvre
Z 2 P 56
Z 3 P 66
Z 4 P 76

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	9	4,6 - 5,3	0,4			
	6 15	2,0 - 2,8 11,6 - 12,7				
200	6	1,7 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 36	750	16	without auxiliary spring			ca. 17	250	6	730	0
	770	12					100	19 - 21		
2a	800	5,2	with auxiliary spring				250	5,7-6,3	300	1,2-1,8
	780	8,6-10,6					350	2,2-3,6		
	800	3,8- 6,6					450	0 - 1		
	830	1,8- 3,2								
	900	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
	Control rod travel mm	mm								
1	2	3	4	5	6	7	8	9	10	11

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
Z 2 P 56 PE 2 A ... S 2152	730 67,0-69,0	760 - 770	-	-	100	mind.20mmRW	250	6
Z 3 P 66 PE 3 A ... S 2146	730 73,5-75,5	760 - 770	-	-	100	mind.20mmRW	250	6
Z 4 P 76 PE 4 A ... S 2152	730 73,5-75,5	760 - 770	-	-	100	mind.20mmRW	250	6

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
	Control rod travel mm	mm								
1	2	3	4	5	6	7	8	9	10	11

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4

Edition 1.10.64

En

PE 6 A 90 C 410 RS 2023

EP/RSV 250-1100 A1 B 173 D

supersedes

company

Lancia-Italien

engine

516,00

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1

mm (from BDC)

Tappet clearance at TDC min. 0.2 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	15	13,5-14,3	0,5			
	6	2,3- 3,1				
	9	6,1- 6,8				
200	9	3,6- 4,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control		
Degree of deflector of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
ca. 57	1100	16	without auxiliary spring			ca. 23	250	7,5	1080	0	
	1140	11,4						19 - 21		1000 0,2-0,4	
	1170	7						7,2-7,8		800 0,9-1,1	
	1160	6,2-10	with auxiliary spring					300		6,4-7	600 1,35-1,65
	1200	3,2-5,3						440		1,4-4,6	350 1,35-1,65
	1230	1,0-3,8						600		0 - 1	
1320	0,3-1										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp 40°C (104 F)		Note changed to	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9			
1080	103,5-105,5	1110-1120	800	112,5-115,5							
			500	115,0-119,0							

Checking values in brackets

* 1 mm less control rod travel than col 2

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E13

E13

As opposed to VDT-WPP 001/4 - first supplement - the special setting is as follows:

- | | | |
|---|------------------------|-------------|
| 1. Governor-spring adjustment | corresponds to | (1) |
| 2. Pre-adjustment of full-load delivery and noting down of control-rod travel | roughly corresponds to | (2) |
| 3. Screw in torque-control retainer until control-rod travel is 1 mm more than that measured under 2. | roughly corresponds to | (3) |
| 4. Final adjustment of full-load delivery by screwing back full-load stop screw | roughly corresponds to | (2) |
| 5. Adjustment of breakaway | corresponds to | (6) |
| 6. Testing of torque control and fuel-delivery characteristics | roughly corresponds to | (3)
(3a) |
| 7. Idle adjustment | corresponds to | (4) |
| 8. Testing high idle
Test starting fuel delivery and adjust with control-rod stop | corresponds to | (6a) |

Please consult test instructions as regards information given in parentheses.

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 20.2.68

En

PE 6 A 90 C 410 RS 2125
S 2229

EP/RSV 250-1100 A 1 B 205 DL
250-1150*

supersedes 23.6.64
company Lancia
engine 516 000
* 402 000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

End of pump delivery

Port closing at prestroke 4,4+0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,5				
	6 12	2,0 - 3,0 9,5 - 10,5				
200	9	3,0 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

250 - 1100 A 1 B 205 DL

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.60	1100	16	without auxiliary spring			ca.25	250	6,0	1000	0
	1140	12,2					100	19 - 21	800	0,4 - 0,6
2a	1180	7	with auxiliary spring				250	5,7-6,3	600	0,6-0,8
	1170	6,0-9,8					330	3,5-4,7	350	0,6-0,8
	1240	1,0-3,8					450	0 - 2,9		
	1340	0,3-1,0				550	0 - 1,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1080	113,5-116,5	1110-1180	800 500	113,0-117,0 112,0-116,0	100	15 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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E15

E15

The numbers denote the sequence of the tests

B. Governor Settings

250-1150 A 1 B 205 DL*

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 63	1150	16,0	without auxiliary spring			ca. 25	250	6,0	1130	0
	1200	10,8					100	19 - 21		
	1240	5,6	with auxiliary spring				250	5,7-6,3	700	0,2-0,4
②a	1200	9,5-11,8				350	3,5-4,8	350	0,6-0,8	
	1250	3,6- 5,8				450	0 - 3			
	1360	0 - 1				560	0 - 1			

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ..)						Control rod travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	3	4	5	6	7	8	9
1130	101,5-104,5	1170		800	104 - 108	100	15 mm RW		
				500	97 - 101				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = $\frac{\text{decreasing pressure} - \text{in bar gauge pressure}}{\text{increasing}}$

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 13.5.71

En

PES 6 A 75 C 320 RS1262
PES 6 A 75 C 320 RS1263

EP/RSV 350-750 A7B589R (1) ^{supersedes}
EP/RSV 350-1500 A2B589R (2) ^{company engine}

Saviem
597.50

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

S1263:

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

**

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,7 - 5,1	0,3			
	6 15	1,9 - 2,6 10,4 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

(1)

Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			Control-lever deflection in degrees 7	Lower rated speed		Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 41	750 770 780	16,0 8,8 4,6	without auxiliary spring			ca. 21	350	5,4	730	0
2a	770	7,0-10,3				with auxiliary spring				120
	800	3,6-4,7		350	5,1-5,7				375	0,7-1,3
	870	0 - 1		400	2,0-3,6					
						460	0 - 1			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop		Rotational-speed limit	Fuel delivery characteristics		Starting fuel delivery Idle		Idle stop	
Test oil temp 40°C (104°F)	Note changed to)		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
730	54,0-56,0	760	500	51,5 - 54,5	100	mind. 20	350	7,5-11,5
** Port closing difference between control-rod travel 9 mm and 21 = 4.5-5.5° camshaft. /.								

Checking values in brackets

* 1 mm less control rod travel than col 2

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The numbers denote the sequence of the tests

B. Governor Settings (2)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
ca. 52	1500 1550 1590	16,0 9,9 4,5	without auxiliary spring			ca. 16	350	5,1	1480	0	
②a	1560 1620 1720	8,5-9,8 1,7-3,5 0 - 1				with auxiliary spring					
									400	0,7-1,3	

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	3	4	5	6	7	8	9
1480 (2)	55,5-57,5	1520	1520	800	49,5-52,5	100	mind.20	350	7,5-9,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure / increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4
Edition 3.71

En

PES 3 A 85 C 310 RS 1232 EP/RSV 250-1000 A1 B12L
PES 4 A 85 C 410 RS 1232 EP/RSV 250-1000 A1 B1024L ./.

supersedes
company Lamborghini
engine FL 1153
FL 1154

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **3,7+0,05** mm (from BDC) **

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000 200	9	5,8 - 6,3	0,4			
	6	2,3 - 3,5				
	9	3,3 - 4,3				

** Port closing difference between control-rod travel 10.2 mm and 21 = 4.5-6° camshaft.

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

250-1000 A1 B12L

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 55	1000	16,0	without auxiliary spring			ca. 25	250	6,0	980	0
	1060	10,5					100	19 - 21		
2a	1100	5,7	with auxiliary spring				250	5,7-6,3	400 300	0 1,2-1,8
	1100	3,5-7,8					300	3,7-4,8		
	1150	0,5-3,2					450	0 -1,0		
1250	0,3-1,0									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	78,5-80,5	1020						

Checking values in brackets

* 1 mm less control rod travel than col 2

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The numbers denote the sequence of the tests

250-1000 A1 B1024L

B. Governor Settings

1 Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.55	1000 1050 1100	16,0 10,7 6,0	without auxiliary spring			ca.25	250	6,0	1000	0
2a	1070 1120 1220	8,0-11,0 2,5- 5,5 0 - 1				with auxiliary spring				100 250 350 440

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limitat Note. changed to ... rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle 5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	68,5-70,5	1020						

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = $\frac{\text{rev/min}}{\text{decreasing pressure - in bar gauge pressure}}$
 $\frac{\text{rev/min}}{\text{increasing pressure - in bar gauge pressure}}$

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)

Notes:

(1) when n = $\frac{\text{rev/min and gauge pressure =}}{\text{bar (= maximum full-load control rod travel)}}$

En

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

VDT-WPP 001/4

Edition 10.73

En

PES 3 A 65 C 410 RS 1185	EP/RSV 250-750 A7B555
PES 4 A 65 C 410 RS 1247	EP/RSV 250-900 A7B555
PES 6 A 65 C 410 RS 1253	EP/RSV 250-1500A8B555
	EP/RSV 250-1800A0B..

supersedes	6.70
company	Hanomag
engine	D 132 HG 1-3
	D 142 HG 4-6
	D 162 HG 7-9

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **1,9 + 0,1** mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	4,3 - 4,7	0,4			
	9	2,0 - 2,6				
	18	8,2 - 9,1				
200	9	1,4 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

250-750

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			4 Control lever deflection in degrees	Lower rated speed		3 Torque control rev/min	Control rod travel mm
			4	5	6		rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11
ca. 47	750	16,0	*			ca. 22	250	6,0	730	0
	780	11,6					100	19 - 21		
	810	5,4					250	5,7-6,3		
	800	5,0-9,0	350	0,5-3,0	300		1,2 - 1,8			
850	1,4-3,0	420	0 - 1							
2a	920	0,3-1,0	**							

250-900

ca. 60	900	16,0	* without auxiliary spring			ca. 25	250	6,0	880	0
	940	11,4					100	19 - 21		
	970	6,8					250	5,7-6,3		
	940	10 - 12					320	2,6-4,2		
	1000	2,0-4,2					450	0 - 1		
	1100	0,3-1,0					** with auxiliary spring			

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E21

674

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	rev/min	mm	(1)
1	2	3		4	5	6		7	8	9		10	11	
250-1500 ca.73	1500 1550 1590 1530 1600 1720	16,0 9,6 4,7 11,4-13,4 3,0- 5,0 0,3- 1,0		without auxiliary spring				ca.20	250 150 250 350 520	6,0 19 - 21 5,7-6,3 3,0-4,3 0 - 1	(3a)	1480 300	0 1,2-1,8	

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
880	57,0 - 59,0	910						D132HG
							1	1500-1800
1480	57,0 - 59,0	1520					2	2400-3000
1780		1820					3	3600

880	57,0 - 59,0	910					4	D142HG
								1500-1800
1480	57,0 - 59,0	1520					5	2400-3000
1780		1820					6	3600

880	57,0 - 59,0	910					7	D162HG
								1500-1800
1480	57,0 - 59,0	1520					8	2400-3000
1780		1820					9	3600

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4

En

PE 4 A 80 B 410 S 311
C 410 RS1085

RQ 250/1125 A 242 d
AA 242 D
EP/RSV 250-750 A7B310
200-925 A1 B293

supersedes

company

engine

Steyr

WD 413 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5				
	6 15	1,2 - 2,0 10,3 - 11,4				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control			
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm rev/min 5 6		Setting point rev/min 7	Control rod travel mm 8	Test specifications Control rod travel mm rev/min 9 10		rev/min 11	Control rod travel mm 12		
1000	14,3-15,1	1000	14,7	1125	14,2-14,7	530	0	150	6,4-8,1	400	16 - 17		
				1140	10 - 14,7			250	4,2-6,6				
				1160	5 - 12			300	3,8-5,4			600	15,4-15,8
				1180	0 - 8			350	1 - 3,5			800	14,8-15
				1240	0			430	0				

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation. At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ -1000 strokes 2-	rev/min 3	rev/min 4	cm ³ -1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1000	71,0-73,0	C, c01.7	500 800 1100	71,0-74,0 70,5-73,5 mind.70,5	100	10,4 - 11,4

Checking values in brackets

1.12.71

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E23

E23

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control					
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm				
1	2	3	4	5	6	7	8	9	10	11				
ca .54	750	16,0	*			ca .25	250	6	880	0				
	790	11,8					100	19 - 21			100	0		
	830	6,4					150	11,5-21					290	1,2-1,8
	800	9,2-11,4					250	5,7-6,3						
	820	5,7- 9,4					320	2,6-4,2						
②a	950	0,3- 1,0	**			450	0 - 1							

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9		
750	73,5 - 75,5	770							250	6

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

200-925 A1 B293

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control					
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm				
1	2	3	4	5	6	7	8	9	10	11				
ca .59	925	16,0	* without auxiliary spring			ca .29	200	6,0	900	0				
	1000	11,3					100	19 - 21			400	0		
	1080	4,2					200	5,7-6,3					350	1,2-1,8
	1000	10 - 12					300	2,2-4,0						
	1100	1,5-2,7					430	0 - 1						
②a	1220	0 - 1	** with auxiliary spring											

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9		
925	78,5-80,5	940			100	10,4-11,4 (16,4-17,0 mmRW)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ② and Governors

En

PE 6 A 85 ^B 410/3 RS 2019 RQ 250/1200 ^A 411 d
_C (RV 5818) (AA 411 d) (AV 5859d)

supersedes
 company FBW
 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,65 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5	0,4			
	6 15	1,3 - 2,1 12,3 - 13,1				
200	9	3,9 - 4,4				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Control rod travel mm 8	Control rod travel mm 10	Control rod travel mm 12	Control rod travel mm 3	Control rod travel mm 3	Control rod travel mm 3	Control rod travel mm 3	
600	15,7-16,3	600	16,0	1200	14,4-14,9	560	0	200	5,7-8,1	750	1,60
				1220	10,5-14,7			250	4,8-7,1	900	15,6-15,9
				1250	4,0-11,0			300	3,5-6,0	1050	15,2-15,5
				1300	0 - 4,8			400	0 - 2,8	1150	14,8-15,1
				1340	0			460	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2	Control rod travel mm 3a	Control rod travel mm 3b	Control rod travel mm 6	Control rod travel mm 6	Control rod travel mm 6	Control rod travel mm 6	Control rod travel mm 6
1180	60,5 - 62,5	500	-	-	-	-	-

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

PES 6 A 85 B 412 RS 461 RQV 200/600-800/1100 AA474D
RS 2046

supersedes
company: MAN
engine.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1.5 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5				
	6 15	1,3 - 2,1 12,3 -13,1				
200	9	3,9 - 4,4				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca.62	850 900 1000 1100 1160 1200 1290	14,8- 17 14,8- 15,2 15 14,8-15,2 8 -13 3 - 9 0				ca.10	100 200 300 500 600 720	6,6- 8 4,2-6,5 3,6- 4 3,6- 4 2,4- 4 0	880 700 600	0 0,4-0,6 0,9-1,1

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5a		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1080	94,0-96,0	1110-1120	600 1100	95,5-98,5 93,5-96,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.11.63

F2

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

En

PE 12 A 90 B 520 RS 466

RQV 200/750-1150 AA 502 D

supersedes

company

K H D

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4				
	6 15	1,4 - 2,2 14,6 - 15,8				
200	9	3,9 - 4,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. .68	1150 1200 1250 1300 1380	15 - 18,2 10 - 14,5 4,5 - 10,7 0 - 6,5 0	ca. .43	650 750 800 900 970	11,5-12,5 5,0-11 2,0- 5,1 0 - 1,9 0	ca. .10	100 200 300 500 700 780	6,3-8,0 4,9-7,0 3,6-4,5 3,6-4,0 3,6-4,0 0	1050 1000 900 800	0 0,4-0,6 0,7-0,9 0,9-1,1

Torque control travel a = 1,0 mm

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
10,5	1160-1170							

Checking values in brackets

* 1 mm less control rod travel than col. 2

F3

F3

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 BOR 5,0 g

Edition 8.64

En

PE ⁴/₆ A 70 B 412 RS 474 RQ 250/1425 A 355 D
A 459 D
PE 4 A

supersedes 20.7.60
company Borgward
engine D 6 M 5 II
D 4 M 3,3 II

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6 18	1,2 - 1,9 10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control			
①		Setting point		Test specifications		Setting point		Test specifications		③			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12		
1350	14,6-15,4	1350	15	1425	14,8- 15	510	0	100	6,4-8,1	450	16 -16,3		
				1440	11,4- 15			150	5,8-7,9			700	15,7-16
				1460	5,6- 13			250	3,8- 6			800	15,4-15,7
				1480	0 - 10			350	0,5-2,8			900	15 -15,3
				1550	0			410	0				

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation. At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /- 1000 strokes 5	rev/min 6	Control rod travel cm ³ /1000 strokes/mm 7
1400	53,0 - 55,0	400	1100 700 400	52,0 - 55,0 54,5 - 57,5 50,0 - 54,0	100	mind. 16mmRW

Checking values in brackets

F4

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PE 6 A 75 B 410/3 LS 479 EP/RSV 300-900 A7A 372 d

supersedes
company M W M
engine

Cam sequence and angular spacing:

1 - 2 - 3 - 5 - 4 6
45 - 75 - 45 - 75 - 45 - 75

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,2 - 3,7	0,2			
	6 15	0,9 - 1,7 8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control	
	mm 2	mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.62	900	16	without auxiliary spring			ca.29	300	7,5	880	0
	940	11,6					100	19 - 21	700	0
②a	970	7,4	with auxiliary spring				300	7,2-7,8	600	0,5-0,7
	960	7 - 10,4					400	4,6-5,9	500	0,9-1,1
	1000	3 - 6					500	0 - 3,9	350	1,0-1,2
	1040	1,2-4					650	0 - 1		
	1150	0,3-1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
10,5	910 - 920							

Checking values in brackets

* 1 mm less control rod travel than col 2

23.9.63

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F5

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PE A 85 B 320 LS 496 EP/RSV 400-1900 A 0 A 101

supersedes
company Krupp
engine

Tappet clearance at TDC min. 0,3+0,05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	3,8 - 4,3	0,3			
	6 12	0,5 - 1,2 6,4 - 7,4				
200	9	1,1 - 1,9				
	21	10,6 - 12,9				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1900	16	without auxiliary spring			ca. 21	400	6	1880	0
	1980	12,2						with auxiliary spring		
	2080	6,1	480	1,2-1,8						
2a	1900	15,7-16,2	with auxiliary spring			ca. 21	400	5,8-6,2	480	1,2-1,8
	2000	10 - 12						3,7-4,9		
	2080	3,8- 8						0,8-3,2		
	2300	0,3- 1						0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9	
1	2	3	4	5	6	7	8	9	
1880	92,0 - 94,0				100	RW 21			

Checking values in brackets

* 1 mm less control rod travel than col 2

21.8.61

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F6

f6

Test Specifications Fuel Injection Pumps **1A** and Governors

40

WPP 001/4

En

PE 6 A 75 B 321 RS 498 EP/RSV 250-1425 A 2 A 104
with altitude stop

supersedes Perkins
company B 340
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,25 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	0	4,7-5,1	0,4			
	6 15	1,9 - 2,6 10,4 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed Degree of deflection of control lever rev/min 1	Control rod travel mm 2		Intermediate rated speed 4 5 6			4 Control-lever deflection in degrees 7	Lower rated speed rev/min 8		Control rod travel mm 9		3 Torque control rev/min 10	Control rod travel mm 11	
	mm	mm rev/min					rev/min	mm	rev/min	mm			
ca. 60	1425	16	without auxiliary spring			ca. 22	250	6	1400	0	500	0	
	1520	9,8					150	19 - 21		310		1,2 - 1,8	
2a	1590	4	with auxiliary spring				250	5,8- 6,2	310	1,2 - 1,8			
	1500	9,8- 12					400	1,1- 3,4					
	1600	2,5- 5,3					450	0 - 2,4					
	1660	0 - 2,8					550	0 - 1					
1730	0 - 1												

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9		
1400	54,5 - 56,5	without altitude stop								
1400	52,5 - 54,5	with altitude stop								

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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F7

L7

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4

En

PES 4 A 85 B 410 RS 503

RQ 250/1200 A 387 d

supersedes

company: Saurer-A

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,6				
	6 15	0,1 - 0,8 11,4 - 12,6				
200	9	3,1 - 4,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16	1200 1220 1240 1340	14,1-14,3 14,0-14,2 10,0-14,0 0 - 8,4	490	0	100 200 300 390	5,4-7,4 3,9-6,1 1 - 3,6 0	700 800 900 1000	15,8-16,0 15,4-15,8 15,0-15,4 14,6-15,0

Torque control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation. At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	Control rod travel cm ³ /1000 strokes/mm 7
1180	65,5 - 67,5	500	800 500	57,5 - 60,5 51,5 - 54,5	100	mind.13 mm RW Idle 6 mm RW

Checking values in brackets

26.7.63

Test Specifications Fuel Injection Pumps ② and Governors

HAN 2,8 a5

En

PE 4 A 65 B 310 LS 531
1002
546

RQ 300/1400 A 384 d
399 d
384

supersedes Hanomag
company D 28 KL
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,3 + 0,1

RW 9

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	5,7 - 6,2	0,3			
	6	1,4 - 2,1				
200	6	0,8 - 1,6				
	21	7,6 - 8,9				

Adjust the fuel delivery from each outlet according to the values in

Festoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ④				Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	Test specifications ④ rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
1350	13,8-14,4	1350	14,1	1400	13,8-14,1	300	0	250	6 - 8,1	600	15,5-15,9
				1420	10 - 13,8			300	3,8-6,4	800	13 - 13,4
				1450	2,5 - 10			350		1000	14,4-14,9
				1470	0 - 7,8			400		1200	14,1-14,4
				1530	0						

Torque-control travel on flyweight assembly dimension a = 0,6 mm

Speed regulation. At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	Control rod travel cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
1380	44,0 - 46,0	750	750	45,0 - 48,0	100	mind. - 20 mmRW
			500	44,5 - 47,5		

Checking values in brackets

15,2.62

Test Specifications Fuel Injection Pumps ② and Governors

En

PE 4 A 65 B 310 LS 1002 RQ 300/1400 A 441 D

supersedes 10.64
company Hanomag
engine D 28 KL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,3+0,1 mm (from BDC) RW 9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	5,7 - 6,2	0,3			
	6	1,4 - 2,1				
200	6	0,8 - 1,6				
	21	7,6 - 8,9				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control								
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③				
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm			
1	2	3	4	5	6	7	8	9	10	11	12	11	12	11	12			
1350	14,4-15	1350	14,7	1400	14,4-14,7	500	0	200	7,2-8,1	450	16 -16,2	800	15,8-16	1000	15,2-15,6			
				1410	11,8-14,6				300							3,6-6,0	1200	14,7-15
				1440	4 -12													
				1460	0 -8,4													
				1520	0													

Torque-control travel on flyweight assembly dimension a = 0,4 mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes/mm Control rod travel
1	2	3	4	5	6	7
1380	43,5 - 45,5	750	750	44,0 - 47,0	100	mind. 20mmRW
			500	42,0 - 45,0		

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 HAN2,8a6

Edition 10.64

En

PE 4 A 65 B 310 LS 531

EP/RSV 300-600-1400 A5A131D

supersedes 19.1.62

company Hanomag

engine D 28 KL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,3 + 0,1

mm (from BDC)

RW 9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	5,7 - 6,2	0,3			
200	6	1,4 - 2,1				
	6	0,8 - 1,6				
	21	7,6 - 8,9				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Degree of deflection of control lever	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control			
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca. 65	1400	16	without auxiliary spring			ca. 22	300	6	1380	0		
	1450	12,2							100	19 - 21	1000	0,3-0,5
	1500	7,6	with auxiliary spring				300	5,7-6,3	700	0,8-1,0		
	1480	8 - 11							400	5 - 6	400	1,1-1,3
	1500	5 - 9							500	1,5-3,7		
	1600	0,6-3,3							700	0 - 1		
2a	1700	0 - 1										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note: changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1380	43,5-45,5	1410-1430	750 500	44,5 - 47,5 44,0 - 47,0	100	20 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col 2

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F11

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Test Specifications Fuel Injection Pumps 1A and Governors

40
VDT-WPP 001/4 HAN 2,1 h
Edition 10.64

En

PE 3 A 65 B 410 LS 1039 EP/RSV 250-1150 A 1 A 156 D

supersedes 13.4.62
company Hanomag
engine D 21 CR 336

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,3 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,7 - 6,2	0,3			
	6 18	1,4 - 2,1 9,7 - 10,6				
200	6	0,8 - 1,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever mm 1	Control rod travel mm 2		Intermediate rated speed 4 5 6			④ Control lever deflection in degrees 7	Lower rated speed rev/min 8		Control rod travel mm 9		③ Torque control rev/min 10	Control rod travel mm 11	
	3	mm rev/min					rev/min	mm	rev/min	mm			
ca. 65	1150	12	without auxiliary spring			ca. 28	250	6	1130	0	1000	0,5-0,7	
	1180	9					100	19 - 21		800		1,2-1,4	
	1210	5,5					250	5,7-6,3		300		1,2-1,4	
	1180	8 - 10	350	3,3-5									
	1220	3,6- 6	450	0 - 3									
②a 1350	0 - 1	with auxiliary spring	600	0 - 1									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		cm ³ /1000 strokes 2		⑥ Rotational-speed limit Note change 1 to) rev/min 3		③a Fuel delivery characteristics rev/min 4		cm ³ /1000 strokes 5		Starting fuel delivery Idle rev/min 6		cm ³ /1000 strokes 7		⑤ ④a Idle stop rev/min 8		Control rod travel mm 9	
1130	42,0-44,0	1160-1180	750	47,5 - 50,5													
			500	46,5 - 49,5													

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4 MB 1,7 i 4
Edition 11.68

En

PES 4 A 50 C 410 RS 1010

EP/RSV 250-1625 A 2 B 60

(V 6841)

A 2 B 433 L*

supersedes 2.64

company (DAI 1,7 i 4)

engine OM 636

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **1,7 + 0,1** mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,2 - 2,7	0,2			
	9	0,8 - 1,4				
	18	4,5 - 5,2				
200	9	0,6 - 1,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min 10	Control rod travel mm 11		
			4	5	6		rev/min 8	Control rod travel mm 9				
ca. 68	1625	12	without auxiliary spring	ca. 24			250	6	1600	0		
	1680	7,8					100	19 - 21			500	0
	1720	4,8										
	1680	7 - 8,5					with auxiliary spring	350			3 - 4,5	
1700	5 - 7,2	450	0 - 2,5									
1750	2,4 - 4	550	0 - 1									
1900	0 - 1											

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1600	30,7-31,7	1630-1650	1000	27,7 - 29,7				
1600	28,2-29,2							

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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F 14

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 1,8 d 1
Edition 2.64

En

PES 4 A 50 B 410 RS 50 EP/RSV 250 - 775 A 4 A 60
S 1010 B 60

supersedes 1.5.61
company Daimler-Benz
engine OM 636 VI-E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,7 + 0,1

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,2 - 2,7	0,3			
	9 18	0,8 - 1,4 4,5 - 5,2				
200	9	0,6 - 1,1				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min mm 5 6	④	Degree of deflection of control lever 7	rev/min mm 8 9	③	rev/min mm 10 11	①	
ca.44	775 815 835 820 850 880 950	16 10 6 7,2-10,2 3 - 5 1,2-2,9 0 - 1	①a	without auxiliary spring with auxiliary spring		④	ca.21	250 100 250 300 350 450	6 13 - 21 5,7-6,3 4 - 5 1 - 3,5 0 - 1	③	750 400 300	0 0 1,2-1,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
750	28,2-29,2	780 - 790						

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ② and Governors

En

PE 5 A 85 B 320 LS 553 RQ 400/1900 A 407 D

supersedes 6.10.61
company: Krupp
engine: D 573

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,8 - 0,1 mm (from BDC) RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,5 - 4,9	0,4			
	6	2,2 - 3,0				
	12	8,9 - 9,5				
200	9	2,6 - 3,4				
	21	14,9 - 17,4				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12				
1850	13,8-14,6	1850	14,2	1900	14 - 14,2	730	0	300	6,1-8,1	700	15,6-16,1				
				1920	10 - 14,2			400	4,4-6,5			900	15,2-15,6		
				1940	5,4-13			500	1,8-4,2			1100	14,8-15,2		
				1980	0 - 8,2			630	0			1300	14,2-14,6		
				2050	0										

Torque-control travel on flyweight assembly dimension a = 0,55 mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1850	91,5 - 92,5	1200	1200	87,5 - 89,5		
			1500	89,0 - 91,0		
			1900	mind. 91,5		

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 12.65

En

PE 4 A 60 C 310 LS 1064

RQV 250-1000 AA 970

supersedes

company

Hanomag

engine

D 28 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,1 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	4,5 - 5,0	0,3			
	6 18	0,6 - 1,2 8,3 - 9,1				
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
66±1,5	1020	15 - 18	-	-	-	10±1,5	150	6,2-8	1000	0
	1040	12,4-16,2					250	4,7-7	850	0,1-0,3
	1080	7,6-12,8					450	2,8-3,8	650	0,3-0,5
	1140	0 - 7,2					550	1,2-2,5	500	0,4-0,6
	1210	0					680	0		

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	38,5-40,5	1010-1030	750 450	39,5 - 42,5 38,0 - 41,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 12.65

En

PE 4 A 75 C 420 RS 1063

RQV 250-825 AB 78R

supersedes

company

engine

Hanomag
D 57 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9	2,8 - 3,4	0,4			
	6 15	0,6 - 1,1 8,3 - 9,3				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
65±1,5	825 840 880 920 960	14,8-17,4 12 -15,4 5 -10,2 0 - 5,4 0	-	-	-	10±1,5	100 200 300 400 580	7,4-8 6 -8 3,6-4,8 2,2-3,8 0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
650	93 - 95	830 - 840						

Checking values in brackets

* 1 mm: less control rod travel than col. 2

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①

Test Specifications Fuel Injection Pumps ① and Governors

En

PE 6 A 65 B 412 RS 1059

RQV 250/600-900/1275 AA

472 D

supersedes

company

engine.

M A N

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,2	0,3			
	6 15	1,1 - 1,8 5,8 - 6,5				
200	6	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
62±1,5	950	17,6-23				10±1,5	100	7 - 8	900	0
	1000	14,8-15,8					200	5,5-7,6	750	0,3-0,5
	1250	14,8-15,2					400	3,6-4	600	0,7-0,9
	1300	12,8-15,2					600	2 -4		
	1400	3,6-9					700	0,3-1,8		
	1500	0				760	0			

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col 2

11.6.63

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PE 6 A 65 B 412 RS 1059 RQV 250/600-900/1350 AA
472 Dsupersedes
company M A N
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,2	0,3			
	6 12	1,1 - 1,8 5,8 - 6,5				
200	6	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
62±1,5	950	17,8-23				10±1,5	100	6,4-8	900	0
	1000	14,8-15,4					200	5,5-7,6	750	0,4-0,6
	1300	14,8-15,2					400	3,6-4	600	0,7-0,9
	1380	12 - 15,2					600	2 - 4		
	1460	2,5 - 8,6					700	0,2-2		
	1550	0					770	0		

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col 2

11.6.63

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Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

VDT-WPP 001/4
Edition 1.12.65

En

PES 4 A 70 B 120 RS 168 EP/RSV 300-1050 A1 A11
PES 4 A 70 C 320/3 RS 1056 EP/RSV 300-1050 A1 B11

supersedes
company Hürlimann
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,3	0,3			
	6 12	1,2 - 2,3 6,5 - 7,0				
200	6	0,5 - 1,3				

Adjust the fuel delivery from each outlet according to the values in
**

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever mm 2	Control rod travel mm 3	Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	Control rod travel mm 11	
		4	5	6		rev/min 8	Control rod travel mm 9			
ca.	1050 1100 1130	16 10,3 6	without auxiliary spring			ca. 25	300	6	1030 500 340	0 0 1,2 - 1,8
②a	1100 1150 1200 1250	8,4 - 12 2,4 - 5,8 0,3 - 2,2 0,3 - 1				with auxiliary spring				100 300 350 400 450

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		cm ³ /1000 strokes 2	⑥ Rotational-speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics rev/min 4	cm ³ /1000 strokes 5	Starting fuel delivery Idle rev/min 6		cm ³ /1000 strokes 7	④a Idle stop rev/min 8	Control rod travel mm 9
1030	41,75-43,75		1060-1080	100	mind.	100	mind. 20 mm RW			

** Port closing difference between control-rod travel 9 mm and 21 = 8° ± 0,5° camshaft.

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PES 3 A 70 C 320 RS 1045 EP/RSV 250-1050 A1B 314

supersedes

company:

Valmet

engine

310 D

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6 18	1,2 - 1,9 10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	1a	Degree of deflection of control lever 4	rev/min mm 4	Control rod travel mm 3	7	8	9	10	11
ca. 58	1090	16					ca. 25	250	6	1030	0
	1100	11		without auxiliary				100	19 - 21	420	0
	1160	4		spring				250	5,7-6,3		
	1100	10 - 12,3						300	4 - 5	300	1,2-1,8
	1150	3 - 7		with auxiliary				350	1 - 3,5		
	1200	0 - 3		spring				450	0 - 1		
	1250	0 - 1					3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1030	48,0 - 50,0	1060-1080	-	-			n 250	RW 6

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4 KHD 5,3 z 4
Edition 7.74

En

PE 4 A 75 C 420 LS1036 EP/RSV 300-1000 A7B261DR
PE 6 A 75 C 420 LS1036 EP/RSV 300-1000 A73261DR

supersedes K H D
company F 4
engine F 6 L 514 F

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2 - 6,6	0,3			
	9	3,0 - 3,7				
	15	8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

EP/RSV 300-1000 A7 B261D

1 Upper rated speed rev/min Degree of deflection of control lever mm 1	Control rod travel mm 2		Intermediate rated speed 4 5 6			4 Control lever deflection in degrees 7	Lower rated speed rev/min 8		Control rod travel mm 9	3 Torque control rev/min 10		Control rod travel mm 11
	Control rod travel mm 3	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11	
ca. 72	1000	16,0	without auxiliary spring			ca. 28	300	6,0	PE 4 A: 400	1,0-1,2		
	1040	11,0										
	1020	6,4										
2a	1050	8,0-10,6	with auxiliary spring				100	19 - 21	PE 6 A: 400	1,5-1,7		
	1100	1,8- 4,0										
	1200	0 - 1										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		cm ³ /1000 strokes 2		6 Rotational speed limit Note changed to 1 rev/min 3	3a Fuel delivery characteristics rev/min 4		cm ³ /1000 strokes 5		Starting fuel delivery Idle rev/min 6		cm ³ /1000 strokes 7		5 4a Idle stop rev/min 8		Control rod travel mm 9	
PE 4 A: 980	80,0-82,0 (79,0-83,0)				1010	750	81,0-84,0									
				500		81,0-84,0 (80,0-85,0)										
PE 6 A: 980	77,0-79,0 (76,0-80,0)			750		86,0-89,0 (85,0-90,0)										
				500		86,5-89,0 (85,5-90,5)										

Checking values in brackets ± 1,0

* 1 mm less control rod travel than col. 2

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F24

f2

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 A 75 C 320 RS 1035 Z RQ 250/1150 AA 239 D
Cam sequence and angular spacing:
1 - 6 - 4 - 2 - 5 - 3
0 -30 -90 -150-240-300°

supersedes
company: K H D
engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2 - 6,6	0,3			
	9 15	3,0 - 3,7 8,5 - 9,3				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3				Control rod travel mm 4	Test specifications rev/min 6	Idle speed regulation Setting point rev/min 7		Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	Torque control rev/min 11		Control rod travel mm 12	
500	15,6-16,4	500	16	1150	13,2-13,8	420	0	200	6,4-8,2	400	16-16,2	700	15,0-16	900	14,7-15,2	1100	13,6-14,0
				1160	8,4-13,6			250	3,6-6,2								
				1200	0 - 6,5			300	0 -2,4								
				1230	0			320	0								

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		cm ³ /1000 strokes 2	Control rod stop rev/min 3	Fuel delivery characteristics rev/min 4		cm ³ /1000 strokes 5	Starting fuel delivery Idle speed rev/min 6		cm ³ /1000 strokes/mm 7
1150	68,5 - 70,5	500	1000	72,0 - 75,0					
			500	77,0 - 80,0					
			400	74,5 - 78,5					

Checking values in brackets

②

Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4

Edition 23.3.65

En

PES 6 A 75 C 380 RS 1035

RQ 250/1075 AA 151 DR

supersedes

company:

KDA

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2 - 6,6	0,3			
	9 18	3,0 - 3,7 8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 5		Idle speed regulation Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
1000	13,8-14,6	1000	14,2	1075	14-14,2	440	0	380	0	400	15,7-16,2	500	15,4-15,8	700	15 -15,4	900	14,3-14,7				
				1100	10,5-14			300	0 - 2					250	3 -3,6						
				1140	4,5-10,5			200	5,5-8,1					150	7,3-8,1						
				1180	0 - 7																
				1340	0																

Torque-control travel on flyweight assembly dimension a = 0,35 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
1050	73,0 - 75,0	600	800	76,5 - 79,5					
			600	77,5 - 80,5					

Checking values in brackets

G2

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4
Edition 9.12.71

En

PES 6 A 70 B 410 RS 1034 RQV 250-1000/1500 AA1960
(V6699D)

supersedes
company Daimler Benz
engine OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6 15	1,2 - 1,9 11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

RQV .. AAV 7239

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1500 1550 1600 1730	12,0-15,2 7,2-12,0 2,0- 8,7 0	ca. 61	1000 1100 1350 1480	12,0-14,8 5,4- 7,7 5,1- 5,3 0	ca. 10	100 250 400 600 760	6,6-8,0 4,1-6,2 2,3-3,8 0,7-2,4 0	1500 400	0 0,6-0,8

Torque control travel a = 0,7 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel		
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	49,5-51,5 → A496D!	1520	500 700 1500	51,5-54,5 51,5-54,5 51,0-54,0			700	

Checking values in brackets

* 1 mm less control rod travel than col. 2

G3

63

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 21.10.64

En

PES 3 A 80 C 320/3 LS 1013 EP/RSV 300-750 A1B 218 DR

supersedes
company MWM
engine KDW 415Z u. D
Fendt (tractors) F 40 U1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	Control rod travel mm 11
	mm 2	mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9		
ca. 42°	750	16	without auxiliary spring			ca. 25	300	6	730	0
	800	10,6					with auxiliary spring	100		
②a	825	7,4						300	5,7-6,3	550
	815	7 - 10					425	1,9-3,8	450	0,7-0,9
	850	3,7-5,8					550	0 - 1	350	0,8-1,0
	900	0,9-3,4								
1050	0,3-1									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤		④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9		
730	63,2-65,2	760-770	600 400	66,7-69,7 68,5-71,5						

Checking values in brackets

* 1 mm less control rod travel than col 2

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G4

G4

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PES 2 A 80 B 320/3 LS 1012
PES 3 A 80 B 320/3 LS 1013

EP/RSV 300-800 A 1 A 122

supersedes
company
engine

MWM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
②a	800	16	without auxiliary spring			ca. 24	300	6	780	0
	840	11,8					100	19 - 21	440	0
	880	6,5	300	5,7-6,3	330		1,2 - 1,8			
	860	7,5-10,6	360	2,8-4,2						
	900	2,7- 6	500	0 - 1						
1000	0,5- 1	with auxiliary spring								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational speed limitat Note changed to) rev/min	③a Fuel delivery characteristics		Starting fuel delivery Idle ⑤		④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
780	73,5 - 75,5	810 - 820						

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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KDA 28,5.63

G5

65

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 29.9.65

En

PE 3 A 80 C 410 RS 1000 EP/RSV 200-925 A1 B165 D

supersedes
company Steyr
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15 + 0,1$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 59	925	16	without auxiliary spring			ca. 30	200	6	900	0
	980	12,6					100	19 - 21		700
2a	1060	5,8	with auxiliary spring				200	5,7-6,3	600	0,8-1,0
	1010	5,5-9,4					400	1,4-3,8	400	1,0-1,2
	1120	0,5-3,0					600	0 - 1		
	1250	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 4a Idle stop	
Test oil temp 40°C (104°F)	Note	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
900	75,0-77,0	930		700 500	81,0 - 84,0 85,0 - 88,0	100	20mm RW		

Checking values in brackets

* 1 mm less control rod travel than ca. 2

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G6

66

Test Specifications Fuel Injection Pumps **1A** and Governors

40

WPP 001/4

En

PE 8 A 75 B 410/3 LS 537

EP/RSV 300-1250 A 2 A 385 D
A 371 D

supersedes
company M W M
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,45 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	3,2-3,7				
	6 15	0,9-1,7 8,5-9,5				
200	9	1,9-2,8				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Degree of deflection of control lever mm	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 torque control			
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca. 51	1250	16	without auxiliary spring			ca. 22	300	6	980	0		
	1320	11,2							150	19 - 21	800	0,7-0,9
	1380	6,2	with auxiliary spring				200	9 - 21	600	1,3-1,5		
2a	1350	7 - 10							300	5,7-6,3		
	1400	3,4-6,4							400	4,1-5		
	1470	0,5-3,2							550	0,3-3,1		
	1550	0,3- 1							700	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1230	56,5 - 58,5	1260-1270	800 500	58,0 - 61,0 57,0 - 60,0	100	min.9,9		

Checking values in brackets

* 1 mm less control rod travel than col 2

G7

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Test Specifications Fuel Injection Pumps ② and Governors

En

PES 4 A 85 B 410 RS 499 RQ 250/1150 A 387 d
/1200 A 387 d

supersedes
company: Saurer
engine: CO 1 D

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,6	0,4			
	6 15	0,1 - 0,8 11,3 - 12,6				
200	9	3,1 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

250/1150

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 6		Idle speed regulation Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12							
1100	14,2-15	1100	14,6	1170	14,4-14,6	1200	6	1220	-13	1280	0	150	7,2-8,1	250	4,7-7	350	1,4-3,8	430	0	450	15,7-16,5	500	15,6-16	700	15,2-15,6	900	14,6-14,9

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	3a	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1130	61,5 - 63,5	600		500	46,0 - 49,0		
				800	53,0 - 56,0		

Checking values in brackets

KDA 13.2.61

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PES 3 A 65 B 320/3 RS 483

EP/RSV 300-1300 A 2 A 398 d
(V 6845 d)

supersedes

company

engine

M W M

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,45 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	4,3 - 4,7				
	9 18	2,0 - 2,6 8,2 - 9,1				
200	9	1,4 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 49	1300 1350 1400	16 11,7 4,7	without auxiliary spring with auxiliary spring			ca. 18	300	6	1280	0
2a	1350 1380 1480 1600	10,0-12,3 7,2-10 1 - 3,3 0,3- 1				100	19 - 21	1200	0,3-0,5	
			200	10,4-21	1000	1,1-1,3				
			300	3,7-6,3	450	1,6-1,8				
			500	1,5-3,6						
			700	0 - 1						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104 F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1280	38,0-40,0	1310-1320	900 500	39,5 - 42,5 37,5 - 40,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

KDA 6.9.63

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G9

63

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PES 6 A 80 B 412 RS 460

EP/RS 250/600-1250 A0 A380

supersedes

company

M A N

MAN-Nr. 270

engine

D 0836 M 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,3			
	6 15	1,2 - 2,0 9,8 - 11,2				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel					
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min mm 5	Control rod travel mm 6	④	Degree of deflection of control lever 7	rev/min mm 8	Control rod travel mm 9	③	rev/min 10	mm 11	①
ca. 64	1250	12		ca. 26	600	12		ca. 16	250	6		1230	0	
	1250	12 - 12,5			600	11,5 - 12			100	20 - 21		500	0	
	1300	7,5 - 9			650	5,8 - 7,8			250	5,7 - 6,3		320	1,2 - 1,8	
	1350	3,4 - 5,6			700	3 - 3,8			350	3,4 - 4,7				
	1400	1,4 - 3			800	0,4 - 2			450	0,4 - 3				
	1500	0 - 1			900	0 - 1			600	0 - 1				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b	Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	71,0 - 73,0	1260-1280			100	20 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

G10

610

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KDA 16.2.62

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP MAN 5,9c
Edition 2.64

En

PE 6 A 65 B 412 RS 320 RQ-250/1250 A 261 D

supersedes 6.11.58
company: M A N
engine: D 0026 M 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,2				
	6 12	1,1 - 1,8 5,8 - 6,5				
200	6	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control			
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12		
550	15,6-16,4	550	16	1250	14,5-14,8	540		100	6,5-8,1	800	15,8-16		
				1280	7,8-13,2			200	5,3-7,3				
				1300	3,8-11,2			300	2,9-5,3			1000	15,4-15,7
				1320	0 - 8,6			400	0 -1,9			1200	14,7-15
				1380	0			440	0				

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
800	56,5 - 58,5	500	500 1230	53,5 - 55,5 52,5 - 54,5	100	mind. 9,9

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 MAN 5,9 b
Edition 2.64

En

PE 6 A 65 B 412 RS 320 RQ 250/1275 A 261 D
MAN-Nr. 203 A 485 D

supersedes 1.2.61
company M A N
engine D 0026 M 1
M 2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 0,1 mm (from BDC) RW 21

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,2	0,3			
	6 12	1,1 - 1,8 5,8 - 6,5				
200	6	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③				
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12			
550	15,7-16,3	550	16	1275	15,5-15,9	540	0	100	6,3-8,1	800	15,7- 16			
				1300				9 -14	200			5 - 7		
				1320				4 -11	250			4 - 6	1000	15,2-15,6
				1340				0 -8,5	350			1 -3,5	1200	14,7-15,1
				1400	0	440	0							

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/ mm 7
800	56,5 - 58,5	500	500 1250	53,0 - 55,0 53,0 - 55,0	100	mind. 9,9

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 8,3

En

PE 6 A 85 B 412 RS 161

RQV 200 - 1000 A 209
(1050)

supersedes

company:

engine.

MAN

D 1246 MT

MAN-Nr. 56

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,6 + 0,1 mm (from BDC) RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	7,4 - 7,8				
	9 6	4,4 - 5,2 2,0 - 2,8				
200	6	0,2 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
66±1,5	1000	15 - 18	-	-	-	10±1,5	100	7 - 7,4		
	1020	12 - 16,2					200	4,2-6,8		
	1060	7 - 12,5					400	1,8-3,2		
	1120	0 - 6,8					500	0,6- 2		
	1200	0					630	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤		
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	100 - 104			1055-1070				

Checking values in brackets

* 1 mm less control rod travel than col 2

KDA 27.11.1957

G15

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 HAN 9,3 b

En

PE 6 A 75 B 320 RS 165 RQV 250...650 A 101 d
348 286 d
1073

supersedes
company: Hanomag
engine: Hannover-Linden
D 93

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9	4,3 - 4,7	0,3			
	6 12	1,2 - 1,9 6,9 - 7,7				
200	9	3,2 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

**

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11		
65±1,5	650	14 - 17,5	-	-	-	10±1,5	100	6,4-8,7	620	0		
	660	11,6-15,8					200	4,9-7,1			600	0 - 0,2
	680	6,6-12,6					250	3,9-6				
	720	0 - 6					400	0,3-1,8				
	760	G					450	0				

Torque control travel a = 1,0 mm

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
640	76,0-77,0	655-670	500 400	82,0-84,0 79,0-82,0	100	ca. 19mm RW		

** Port closing difference between control-rod travel 12 mm and 21 = 7...8° camshaft.

Checking values in brackets

* 1 mm less control rod travel than col. 2
1.3.1955

G16

G76

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PES 6 A 70 B 410 RS 174 EP/RSV 250 - 900 A 1 A 363 d

Supersedes
company
engine

Daimler Benz
OM 321

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9 + 0,1$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	2,8 - 3,1	0,3			
	12 18	4,9 - 5,6 8,9 - 9,7				
200	9	2,0 - 2,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min 10	Control rod travel mm 11
			4	5	6		rev/min 8	Control rod travel mm 9		
ca. 49	900 950 990	16 11,4 6	without auxiliary spring with auxiliary spring			ca. 23	250	6	880	0
2a	970 1000 1050 1150	8 - 10,5 3,8-8 0,5-3,5 0 - 1							100 250 350 400 550	19 - 21 5,7-6,3 3,4-4,6 1,5-3,8 0 - 1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9		
900	53,0 - 55,0	910 - 920					n 250	RW 6		

Checking values in brackets

* 1 mm less control rod travel than col 2

KDA 18.5.60

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G18

G18

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PE 12 A 75 B 520 RS 178 RQV 200 - 1050 A 447
(V 6715)

supersedes
company K H D
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,2 - 3,7	0,3			
	6 15	0,9 - 1,7 8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
66+1,5	1050 1100 1150 1200 1260	15 - 18 9,5- 15 4 -9,5 0 - 5 0	-	-	-	10+1,5	200 300 400 500 680	6 - 8 3 -4,5 2,3-3,8 1,5-2,8 0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000 1050	71,0-73,0 79,0-81,0	1060-1080 Fuel overquantity (with electromagnet)			100	21 mm		1000

Checking values in brackets

* 1 mm less control rod travel than col 2

KDA 28.3.62

G19

G19

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Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAI 10,8 g
Edition 3.64

En

PES 6 A 90 B 410 RS 283 RQ 250/1125 A 301 D

supersedes 1.5.61
company: Daimler Benz
engine: OM 326/172 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC) RW 18

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 7,9				
	6 15	3,2 - 4,0 16,0 - 17,3				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 6		Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 10		Control rod travel mm 12										
1050	14,6-15,4	1050	15	1125	14,6-15	1140	11	14,5	530	0	100	6,8-8,1	200	5,4-7,6	250	4,2-6,6	350	1 -3,6	430	0	450	15,4-16,2	500	15,2-15,7	600	15 -15,1

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At

1 mm less control rod travel

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		cm ³ /-1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		cm ³ /-1000 strokes 5		Starting fuel delivery idle speed rev/min 6		Control rod travel cm ³ /1000 strokes/mm 7	
700	96,0 - 98,0	500		500	94,0 - 97,0	1000	98,0 - 102,0	1100	98,0 - 102,0	100	mind. 14,4		

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4

En

PE 6 A 60 B 310 RS 252 EP/MZ 80 A 90
S 482
S1110
V7527

supersedes
company Perkins
engine P 6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
1000	12	4,5 - 5,0	0,3			
	6	0,5 - 1,2				
	18	8,3 - 9,1				
200	6	0,3 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Torque control travel mm	Leakage*		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
-	500-480	10	500	11,4-12	500	4,9-5,1	550 600	7,1-10,4 3,3- 6,8		

control rod travel test (cols 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104 F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm ³ /1000 strokes
rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	
1	2	3	4	5	6	7	8	
750	0	44 - 46						

Checking values in brackets

7.4.70

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
1. Edition

En

PE 8 A 90 D 321/3 LS2437 RQ 250/1350AB881DR

supersedes

company Steyr
engine WD 815.00

Cam sequence and angular spacing:
1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je 45°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,0 - 5,5	0,4			
	6	1,6 - 2,6				
200	9	2,5 - 3,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 5		rev/min 6		Idle speed regulation Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
600	15,7-16,3	600	16,0	1370	14,6-15,0	530	0	150	7,0-8,1	800	15,8-16,0												
				1400	6,6-13,4			250	5,0-7,2	1000	15,3-15,7												
				1450	0 - 6,0			350	1,5-4,0	1100	15,0-15,2												
				1490	0			430	0														

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1390-1405

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		cm ³ /-1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		cm ³ /-1000 strokes 5		Starting fuel delivery Idle speed rev/min 6		cm ³ /1000 strokes/mm Control rod travel 7	
1350	88,0 - 90,0	800	1000	96,0-99,0	100	ca. 15mm RW							
without	(87,0 - 91,0)			(95,0-100,0)									
1350	82,0 - 86,0		800	97,5-100,5									
with	(81,0 - 87,0)			(96,5-101,5)									

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 3.74

En

PES 8 A 75 C 320 RS2357 EP/RSV 450-1300 AO B1040D
Inlet pressure 2.5 bar 1 - 8 - 7 - 3 - 6 - 5 - 4 - 2 45° each
With CRT 10 in start-of-delivery setting of cyl. 1, positioning
device must engage in camshaft groove. Coupling must be
horizontal in this setting.

supersedes

12.73

company

I H C

engine

DV 550 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

End of pump delivery 3,95 + 0,1 mm (from BDC) (RW 10,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0	6,2-6,6				
1300	ca. 8,2	max. 4,5	(Cyl. 1-4-6-7)			
	ca.	0,1-1,3	(Cyl. 2-3-5-8)			
450	ca. 8,8	min. 3,4	(Cyl. 1-4-6-7)			
		0,1-1,4	(Cyl. 2-3-5-8)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel					
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min mm 5	Control rod travel mm 6	④	Degree of deflection of control lever 7	rev/min mm 8	Control rod travel mm 9	③	rev/min mm 10	11	①
ca. 52	1300	13,0						ca. 30	450	5,7		1300	0	
	1400	9,8		without auxiliary spring					300	19 - 21		550	0,6-0,8	
	1500	5,9							450	5,4-6,0				
	1400	9,2-10,2							600	1,5-3,5				
	1550	2,8- 5,0		with auxiliary spring					750	0 - 1				
	1770	0,3- 1,0												

Torque control travel a = mm

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b		Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	④a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	63,5-65,5	1350-1365*		1000	61,0-65,0	100	111,5-134,5		(Cyl. 1-4-6-7)
						100	0		(Cyl. 2-3-5-8)
						450	14,5-18,5		(Cyl. 1-4-6-7)
						450	0		(Cyl. 2-3-5-8)

Checking values in brackets

* 1 mm less control rod travel than col 2

G23

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 30.3.72

En

PES 6 A 90 D 420 LS 2354 EP/RSV 375-1050 A2B622DR

supersedes

company Case

engine A 451 BDT

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,6 - 5,1	0,5			
	6 12	1,1 - 2,0 8,4 - 9,4				
200	9	2,7 - 3,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 38	1080 1110 1160	12,4 8,1 2,3	without auxiliary spring			ca. 18	375	7,2	1050	0
2a	1090	12,2-13,0				with auxiliary spring			150	19 - 21
	1150	4,3- 5,6	375	6,9-7,5	450				0,6-0,9	
	1240	0 - 1,5	450	3,2-5,2	580				0 -1,5	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1050	100 - 102	1090		1150	8,0 - 18,0	100	12,6-13,2	375	15,25-19,25
				750	109 - 113				
				675	max. 112				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 29.8.74

En

PES 6 A 90 C 420 LS 2264 EP/RSV 300-1050 A2 B567DR
 ..D.. LS 2354 375-1050
 ..D.. LS 2461

supersedes 11.5.70
 company 16.2.71/22.4.71
 engine Case
 A 451 BDT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Test with case overflow valve!
 Pay attention to special governor setting!

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,6 - 5,1	0,4			
	6 12	1,1 - 2,0 8,4 - 9,4				
200	9	2,7 - 3,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control	
	mm	mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3				7	8	9	10	11
ca. 39	1070	12,4	without auxiliary spring			ca. 18	375	7,4	1050	0
	1110	7,7					150	19 - 21		
	1160	2,3	with auxiliary spring				375	7,1 - 7,7	900	0,1 - 0,3
	1090	11,8-12,4				450	3,2 - 5,1	500	0,3 - 0,6	
	1150	4,8- 6,0				580	0 - 1			
2a	1260	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes	Note changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1050	95,5-97,5	1090-1195:*	1150	8 - 18	100	12,6-13,2	375	15,25-19,25
			750	99 - 103				
			650	max. 102				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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H1

HA

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 7.73

En

PES 4 A 85 C 410 RS 2331 EP/RSV 250-900 A1 B1029L
PES 6 A 85 C 410 RS 2332

supersedes
company Motori VM
VM 114
engine VM 116

Port closing difference between control-rod travel 13 mm and 21 = 6-7,5° camshaft.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,7 + 0,05 mm (from BDC) RW 21

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	9	5,9 - 6,3	0,4			
1000	6	2,0 - 2,8				
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
			4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 50	900 960 1000	16,0 10,8 5,4	without auxiliary spring			ca. 24	250	6,0	880	0
2a	980 1050 1150	5,6-9,6 0,9-3,2 0 - 1	with auxiliary spring				100 250 350 450	19 - 21 5,7-6,3 1,0-3,4 0 - 1	400 300	0 1,2-1,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 cm ³ /1000 strokes 7		4a Idle stop rev/min 8		Control rod travel mm 9
880	82,5-84,5		910			200	1,5-9,5	dispersion max. 2)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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H2

H2

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4
Edition 11.1.72

En

PES 6 A 90 C 410 RS 2326

RQV 250-1300 AB 787 DL

supersedes

company: Saurer
engine: CP 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,8 - 6,3	0,4			
	6	2,5 - 3,4				
200	12	10,2 - 11,1				
	9	3,2 - 4,1				

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min mm 6	④	Degree of deflection of control lever 7	rev/min mm 9	③	rev/min mm 10	①
ca. 66	1300 1380 1460 1580	15,0-17,8 9 - 13 0 - 8 0		-	-		ca. 10	100 250 400 600 770	6,6-8,0 3,5-5,7 2,2-3,7 0,8-2,2 0	1300 600	0 0,4-0,6
											③a

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤		
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	④a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	74 - 76	1320		700 500	72,5 - 75,5 62,5 - 65,5	100	ca. 15 mmRW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

H3

H3

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 9.72

En

PE 6 A 85 D 412 RS 2303 RQV 250-825/1400 AB819D

supersedes

company:

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

RQV 250-825/1400 AB819D

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③	① rev/min 10	mm 11
ca. 66	1400 1460 1540 1660	14,0-17,0 9,0-13,5 1,5- 8,4 0	ca. 47	700 900 1000 1380	11,8-13,8 2,8- 4,8 0,6- 1,0 0	ca. 10	100 250 500 620	6,5-8,0 3,4-5,7 1,0-2,0 0	800 500	0 0,9-1,1
						③a			0-150 250 400 900	Start 1,0-2,2 2,4-2,9 6,6-7,1

Torque control travel a = 1,0 mm

1000 7,4-7,6
1400 8,3
1560-1660 end (11)

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5b	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
0,5 kp/cm ² 1400	72,5-74,5	1430	800 500	69,0 - 72,0 0 kp/cm ² 57,5 - 61,5	Change-over point 200	130 U/min		

Checking values in brackets

* 1 mm less control rod travel than col. 2

H4

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H4

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4
Edition 2.7.71

En

PE 6 A 80 C 320 RS 2312 RQV 250-1200 AB760DR
D

supersedes 9.5.71
company Enasa
engine 9120/30

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4		3,1 - 3,5	
200	6	1,2 - 2,0			0,1 - 0,6	
	15	10,3 - 11,4			- - -	
	9	2,9 - 3,7			0,6 - 1,3	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel		
Degree of deflection of control lever mm 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever mm 4	rev/min 5	Control rod travel mm 6	④	Degree of deflection of control lever mm 7	rev/min 8	Control rod travel mm 9	③	rev/min 10	mm 11	①
ca. 65	1200 1250 1360 1420	14,7-17,6 10,5-14,0 0 - 5 0		-	-	-		ca. 10	100 250 400 600 800	7,2-8,2 4,4-6,6 3,2-2,8 1,6-2,8 0				

Torque control travel a = 0 mm

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5a		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	64 - 66	1220			100	17,7-18,3		
					Change-over point 130-200 U/min			

Checking values in brackets

* 1 mm less control rod travel than col. 2

H5



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Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4

Edition 4.11.69

En

PES 6 A 85 C 410/3 RS 2297 EP/RSV 500-1100 A 4 B548 D
Positioning bore in gear is start-of-delivery setting
of cyl. 1 (on drive)!

supersedes

company
engine

Ford
2704 E

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,8 - 4,3	0,3			
	6 12	0,9 - 1,7 6,9 - 7,9				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 70	1100	16,0	without auxiliary spring			ca. 34	500	5,5	1080	0
②a	1150	11,0					with auxiliary spring	150		
	1200	3,2	500	5,2-5,8						
	1150	9,0-11,5	580	0 - 1	500	0,2-0,4				
	1180	3,0- 8,0								
	1250	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	62,5 - 64,5	1120	800 500	58,5 - 61,5 53,0 - 57,0			500	5,0

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 9.73

En

PES 4 A 90 C 410 RS 2294 EP/RSV 300-1200 A1B424DL
(V10497D)

supersedes
company Daimler-Benz
engine OM 314

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1.	2	3	4	2	3	6
1000	9	4,5 - 5,0	0,4			
200	6	1,8 - 2,6				
	12	7,3 - 8,2				
	9	2,0 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 67	1200	16,0	without auxiliary spring			ca. 28	300	7,3	1180	0
2a	1250	11,2					with auxiliary spring			100
	1290	6,4	300	7,0-7,6	350	0,3-0,5				
	1260	8,5-11,0	450	3 - 5						
	1320	2,0- 4,8	640	0 - 1						
1440	0 - 1									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to 1 rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1180	54,0-56,0	1225:0,5-1,0 mmRW less than column 2	800 500	46,0-49,0 41,5-44,0	100	15,0-15,6 mm RW	300	7,3

Checking values in brackets

* 1 mm less control rod travel than col 2

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H7

H7

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 24.4.70

En

PES 6 A 80 C 420 LS 2264

EP/RSV 300-950 A 2 B520DR

supersedes

10.69

Test with case overflow valve!

company

Case

Pay attention to special governor setting!

engine

A 401 BD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,1 - 4,5	0,3			
	6 12	1,3 - 2,1 6,8 - 7,6				
200	6	1,3 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min 10	Control rod travel mm 11
	2 mm	3 mm rev/min	4	5	6		8 rev/min	9 mm		
ca. 43	960 1000 1050	10,8 8,7 5,0	without auxiliary spring with auxiliary spring			ca. 27	375 150 375 450 600	6,0 19 - 21 5,7-6,3 3,3-4,6 0 - 1	930 750 450	0 0,5-0,7 0,8-1,1
2a	1000 1100 1160	8,0-9,0 1,2-3,0 0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
1 rev/min	2 cm ³ /1000 strokes		4 rev/min	5 cm ³ /1000 strokes	6 rev/min	7 cm ³ /1000 strokes	8 rev/min	9 Control rod travel mm
930	60,5-62,5	960	1040 650 550	10,5 - 18,5 69,0 - 72,0 max. 71,0	100	11,1-11,7	375	12,5 15,5

Checking values in brackets

* 1 mm less control rod travel than col 2

H8

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 25.1.73

En

PES 6 A 85 C 420 LS 2264

EP/RSV 300-950 A 2 B 553 DR
375-950

supersedes 28.4.71

company Case
engine A 401 BD

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15 + 0,1$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,1 - 4,5	0,4			
	6 12	1,1 - 1,9 7,2 - 8,0				
200	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	2 mm	3 mm rev/min	4	5	6		8 rev/min	9 Control rod travel mm	10 rev/min	11 mm
ca. 40	970	10,4	without auxiliary spring			ca. 23	375	6,3	950	0
	1020	6,6					150	19 - 21		
2a	1170	2,2	with auxiliary spring				375	6,0-6,6	800	0,5-0,7
	990	10,2-10,6					450	3,1-4,5	400	1,3-1,6
	1050	3,8- 5,2					600	0 - 1		
	1140	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
1 rev/min	2 cm ³ /1000 strokes		4 rev/min	5 cm ³ /1000 strokes	6 rev/min	7 cm ³ /1000 strokes	8 rev/min	9 Control rod travel mm
950	59,0 - 61,0	990	1045	6,5 - 14,5	100	12,6-13,2	375	12,5-16,5
			600	71,0-75,0				
			500	max. 73,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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H9

H3

Test Specifications

Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 11.8.72

En

PES 6 A 85 C 420 LS 2264 EP/RSV 900-925 A 2 B 544 DR
375-925

supersedes 28.4.71
company Case
engine A 401

Test with case overflow valve!
Pay attention to special governor setting!
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel ¹ mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4			
	6 12	1,1 - 1,9 7,2 - 8,0				
200	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	940 1000 1050	10,2 5,8 2,0	without auxiliary spring			ca. 24	375	6,6	925	0
2a	965 1000 1120	9,9-10,4 6,0- 7,2 0 - 1				with auxiliary spring				
					450				1,3-1,6	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit ¹ Note changed to) rev/min		3a Fuel delivery characteristics		Starting fuel delivery rate		5 Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	4	rev/min 5	cm ³ /1000 strokes	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
925	55,0 - 57,0	965	1010	8,5 - 16,5		100	12,6-13,2	375	12,5-16,5
			550 450	64,5 - 68,5 max. 67,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 17.2.71

En

PES 6 A 85 C 420 LS 2264 EP/RSV 300-1000 A 2 B 546 DR superseded 16.9.70
375-1000 company Case
engine A 401 BD

Test with case overflow valve!
Pay attention to special governor setting!
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000*	9	4,8 - 5,3	0,4			
	6 12	1,7 - 2,5 8,2 - 9,0				
200	6	1,1 - 1,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 40	1020	10,5	without auxiliary spring			ca. 22	375	6,5	980	0
	1050	7,4					150	19 - 21		
	1070	5,6	375	6,2-6,8						
2a	1050	6,5 - 8,0	with auxiliary spring				450	3,0-4,6	800	0,5 - 0,7
	1100	3 - 4,3					600	0 - 1	450	0,9 - 1,2
	1200	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)	Note changed to)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	3	4	5	6	7	8	9		
980	1020	650 550	63,0 - 66,0 max. 65,0	100	12,6-13,2	375	12,5- 16,5		

Checking values in brackets

* 1 mm less control rod travel than col_2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 31.7.73

En

PES 4 A 85 D 420 LS2263 EP/RSV 375-1050 A2B706DR

supersedes
company Case
engine A 336 BD

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,15-4,55	0,4			
	6 12	1,15-1,95 7,25-8,05				
200	6	0,95-1,75				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 40	1070	13,4	without auxiliary spring			ca. 18	375	8,0	1050	0
	1100	10,0					150	19 - 21		
	1140	3,6	375	7,7-8,3	500		0,2-0,5			
	1090	13,2-13,8	450	3,5-5,6						
(2a)	1150	4,8- 6,6	with auxiliary spring			600	0 - 1			
	1240	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1050	94,5 - 96,5	1080-1095		750	98,5-102,5	100	12,4-13,4	375	17,5-23,5
				650	max. 101,5				
				1150	8,5- 18,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

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H12

H12

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 2.9.71

En

PES 4 A 85 C 420 LS 2263 EP/RSV 300-950 A 2 B 519DR
375-950

supersedes 23.2.71
company Case
engine A 336 BD

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000*	9	4,1 - 4,5	0,4			
	6	1,1 - 1,9				
200	12	7,2 - 8,0				
	6	0,9 - 1,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Degree of deflection of control lever 1	Upper rated speed rev/min		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm	Control rod travel mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 43	970	11,6	without auxiliary spring			ca. 27	375	7,0	950	0
	1000	9,4					150	19 - 21		
2a	1050	6,0	with auxiliary spring				375	6,7-7,3	400	0,4-0,7
	1050	5,0-6,6					450	4,2-5,5		
	1100	2,1-3,8					640	0 - 1		
	1200	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational speed limit Note changed to 1 rev/min	3a Fuel delivery characteristics		5 Starting fuel delivery Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
930	86,0 - 88,0	970	750 500	92,5-95,5 max. 94,5	100	12,6-13,2	375	18,5- 22,5

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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H15

HA:

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 24.2.70

En

PES 4 A 80 C 420 LS 2263 EP/RSV 300-950 A 2 B 518 DR

supersedes 30.6.69
company C a s e
engine A 267 BD

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	4,1 - 4,5	0,3			
	6 12	1,3 - 2,1 6,8 - 7,6				
200	6	1,3 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 46	970 1000 1070	11,0 9,0	without auxiliary spring			ca. 29	375	6,5	960	0
2a	1050 1100 1200	5,0-6,8 2,4-4,0 0 - 1				with auxiliary spring				
					450				0,7-1,0	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 4a Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm ³ /1000 strokes	Note changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
	1	2	3	4	5	6	7	8	9
	930	58,0-60,0	970	650 550	65,0-68,0 max. 67,0	100	11,1-11,7	375	12,5- 16,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 KHD 17,4 a
Edition 6.71

En

PE 12 A 85 C 520 RS 2256 RQ 200/1150 AB 638 DR

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 - 1
0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315 - 360°

supersedes 3.70
company. K H D
engine: F 12 L 814
(300 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9 - 5,5	0,4			
	6	1,3 - 2,1				
200	15	12,3 - 13,1				
	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 5		rev/min 6		Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		rev/min 11		Control rod travel mm 12	
530	15,3-15,9	550	15,6	1170	13,6-14,0	540	0	100	6,5-8,1	600	15,4-15,7												
				1200	6,5-12,5			200	3,8-5,4	800	14,8-15,2												
				1230	0 - 8,3			300	3,0-5,3	1050	14,0-14,3												
				1290	0			440	0														

Torque-control travel on flyweight assembly dimension a = 0,65 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		cm ³ /-1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		cm ³ /-1000 strokes 5		Starting fuel delivery Idle speed rev/min 6		cm ³ /1000 strokes/mm 7	
1150	76,5 - 78,5					1000	77,5 - 79,5	100	ca. 16 mm RW				
						700	82,5 - 84,5						

Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

En

PES 6 A 85 C 410 RS 2254 EP/RSV 250-1125 A 1 B 41 L
250-1100*
.. A 1 B 290 L

supersedes
company Kaelble
engine MD 215S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15+0,1 mm (from BDC) RW 9 mm = 0,6+0,1 max.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	6	1,3 - 2,1	0,4			
	9 15	3,9 - 4,3 9,8 - 11,2				
200	9	3,9 - 4,4	0,4			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 62	1125	16,0				ca. 26	250	6,0	1100	0
	1180	10,5					100	1,9-2,1	400	0
2a	1230	4,0				250	5,7-6,3	290	1,2-1,8	
	1170	10,6-12,5				300	0,9-3,3			
	1220	3,4- 3,7				440	0 - 1			
	1340	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min:	3a Fuel delivery characteristics		Starting fuel delivery Idle 5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	71,5-73,5	1120						
1120	74,5-76,5	1140						

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 6.68

En

PE 4 A 80 C 410 RS 2249
(V 8595)

EP/RSV 250-900 A 1 B 274 DL

supersedes

company

Torpedo

engine

T 524 TK

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,15 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,5 - 6,0				
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 3,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 49	900	16,0	without auxiliary spring			ca. 23	250	6,0	880	0
	950	11,4					100	19,0-21,0	800	0,3-0,5
	990	5,8					250	5,7-6,3	700	
2a	970	7,0-10,3	with auxiliary spring				350	3,5-4,7		0,7-0,9
	1000	4,0- 6,8					450	0 -2,8	550	0,7-0,9
	1050	0,9- 3,6					550	0 -1,0	350	
	1120	0,3- 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to 1 rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle 5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	76,0 - 79,0	910 - 920	700 500	79,5 - 83,5 76,5 - 80,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

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H19

H19

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 29.11.68

En

RO-PES 4 A 90 C 410 RS 2240 RO-EP/RSV 250-900 A1B262 DL

supersedes
company
engine

Mefin
D 103
(65PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,9 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,8 - 6,3	0,4			
	6 15	2,5 - 3,4 13,5 - 14,8				
200	9	3,2 - 4,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees	Lower rated speed		3 Torque control	
	mm	mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 48	900	16,0	without auxiliary spring			ca. 23	250	6,0	880	0
2a	950	11,0					100	19 - 21		
	980	6,6	250	5,7-6,3	400	0,7 - 0,9				
	950	9,5-12,0	300	3,5-4,6						
	1000	1,8- 6,0	420	0 - 1						
	1060	0 - 1	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104 F)		6 Rotational speed limitat Note changed to 1 rev/min	3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
900	71,0 - 73,0	920	600 400	78,0 - 81,0 68,0 - 70,0	100	mind. 20mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 6.3.67

En

PE 4 A 75 C 412 RS 2222 EP/RSV 250-1600 A2B 484 DL

supersedes
company Hotschkiss
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	3,7 - 4,1	0,3			
	6	1,2 - 1,9				
	15	9,3 - 10,3				
200	9	2,2 - 3,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control			
	mm	mm rev/min	4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca. 69	1600	16,0	without auxiliary spring			ca. 24	250	7,0	1580	0		
	1680	10,8							150	19 - 21	1200	0 - 0,2
	1740	6,4	with auxiliary spring				250	6,7-7,3	800	0,6-0,8		
	1700	7,8-10,4							450	3,5-5,3	400	0,9-1,1
	1800	2,4- 5,0							600	0 - 3,3		
	1950	0 - 1							760	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
rev/min	cm ³ /1000 strokes	Note changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1500	44,0-46,0	1620	1675	5,0-15,0	250	0,9-1,1		
			500	42,0-45,0				
			1600	43,0-46,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

H21

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 4 A 85 C 320/3 RS 2121	EP/RSV 300-1000 A1B41	(1)	supersedes	11.64, 10.74
PES 4 A 85 D 320 RS 2423	EP/RSV 300-1050 A1B41	(2)	company	Hüllmann
			engine	D 300 (1) D 310 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

**

Port closing at prestroke 1,5+0,1 RW9 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery "C" cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery "D" cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 5,9	0,4	9	5,6 - 6,0	
	6	1,6 - 2,6		6	2,3 - 3,1	
	12	9,4 - 10,4		-	- - - -	
200	6	0,4 - 1,3		6	0,1 - 0,7	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1050	16,0	without auxiliary spring			ca. 25	300	6,0	1030	0
	1100	10,2					100	19 - 21		
	1150	3,0					300	5,7-6,3		
	1100	8,4-12,0	with auxiliary spring				350	3,6-4,5	340	1,2-1,8
	1150	2,4- 5,8					450	0 - 1		
	1250	0,3- 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)	Note	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
(1) ca. 10 mm RW-		1020							
(2) 1050	83,5-85,5	bzw. 1090-1100*				100	6,1 - 7,1		

** Port closing difference between control-rod travel 9 mm and 21 = 6 - 7° camshaft.

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 3.6.69

En

PES 6 A 90 C 420 LS 2209

EP/RSV 225-1100 A 1 B 467 R

supersedes
company
engine

Berliet
MH 635

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	6	2,9 - 3,7	0,4			
	9 15	7,4 - 7,9 16,0 - 17,3				
200	6	1,1 - 2,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees	Lower rated speed		3 Torque control	
	mm	mm rev/min	4	5	6		rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1100 1140 1180	16 12,3 7,3	without auxiliary spring			ca. 24	225	6,0	750	0
2a	1160 1220 1320	8 - 11,0 2,2-4,6 0 - 1	with auxiliary spring				100 225 320 430	19 - 21 5,7-6,3 1,6-3,9 0 - 1	400 275	0 1,2-1,8

Testoil-ISO 4113

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40° C (104° F)		6 Rotational speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
750	125,5- 128,5				100	min RW 20		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

En

PES 4 A 80 C 320 RS 2202 EP/RSV 200-950 A 7 B 476 R

supersedes
company
engine

MAN
D 0834 M5
(73 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,3 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	6	1,2 - 2,0				
	9 15	4,1 - 4,5 10,3 - 11,4				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control Control rod travel	
	mm	mm rev/min	4	5	6		rev/min	mm		rev/min
1	2	3	4	5	6	7	8	9	10	11
ca. 64	950 980 1010	16,0 12,2 7,5	without auxiliary spring			ca. 24	200	6,0	950	0
2a	1000 1050 1150	7,0-10,5 2,0- 3,8 0 - 1	with auxiliary spring				100 200 300 400	19,0-21,0 5,7-6,3 1,8-3,8 0 - 1	400 250	0 1,2-1,8

Testoil-ISO 4113

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40 C (104 F)		6 Rotational speed limit	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
rev/min	cm ³ /1000 strokes	Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
950	58,5 - 60,5	970						

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ② and Governors

En

PE 10 A 90 C 610/4 LS 2180

RQ 250/1400 AB 575 DL

supersedes

company:

KHD

engine:

F 10 L 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4				
	6 15	2,7 - 2,5 13,4 - 14,3				
200	9	3,1 - 4,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control				
Control rod travel mm 2	①	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	Test specifications rev/min 6	④	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	⑤	rev/min 11	Control rod travel mm 12	③
1300	13,6-15,4	1300	14,0	1400	13,8-14		520	0	150	6,2-8,1		700	15,8-16	
				1440	4 - 12				250	4,2-6,5		850	15,2-15,5	
				1460	0 - 9,4				350	0,8-3,2		1000	14,2-14,6	
				1520	0				420	0				

Torque-control travel on flyweight assembly dimension a = 0,6 mm 0,05 Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed				
rev/min 1	cm ³ /-1000 strokes 2	②	③a	rev/min 4	cm ³ /-1000 strokes 5	③b	rev/min 6	cm ³ /1000 strokes/mm 7	⑥
1380	74,5-76,5		600	1000	67,5 - 70,5				
				600	67,0 - 70,0				

Checking values in brackets

Testoil-ISO 4113

25.11.65

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
Edition 10.65

En

PE 6 A 90 C 410 RS 2174 RQ 250/1200 AB 411 DL

supersedes
company: FBW
engine: CU

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,65 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4	0,4			
	6 15	2,3 - 3,1 14,2 - 15,5				
200	9	3,8 - 4,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Control rod travel mm 8	Control rod travel mm 9	Control rod travel mm 10	Control rod travel mm 12	Control rod travel mm 12	Control rod travel mm 12	Control rod travel mm 12	
600	15,6-16,4	600	16	1200	14,6-14,9	560	0	100	7 - 8,1	900	15,6-16
				1240	6,4-12,2			200	5,8-8,1	1000	15,3-15,7
				1280	0 - 7,2			300	3,5-6		
				1340	0			400	0 - 3,8	1150	14,7-15,1
								460	0		

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2	Control rod travel mm 3a	Control rod travel mm 3b	Control rod travel mm 3	cm ³ /-1000 strokes 5	Control rod travel mm 6	Control rod travel mm 7	Control rod travel mm 6
1180	60,0 - 63,0	C, col. 6-7			100	14 mm RW	

Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
Edition 8.74

En

PES 6 A 85 D 410 RS 2139 RQ 250/1250 AB904DL

supersedes
company: MAN
engine: D 0846 HM 11
(Korea)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4			
	6	0,6 - 1,4				
200	9	1,4 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

PQ 250/1250 AB904DL

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control							
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12						
600	15,7-16,3	600	16,0	1270	14,4-14,7	520	0	150	6,4-7,8	900	15,8-16,0						
				* 1300	7,0-12,8			250	4,2-6,0								
				1330	0 -10			350	0,6-3,2			1150	14,8-15,1				
				1390	0			420	0								

Torque-control travel on flyweight assembly dimension a = 0,4 mm Speed regulation: At 1290-1305 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm Control rod travel 7
1250	69,5 - 71,5 (68,5 - 72,5)	500	800	71,0 - 74,0	100	11,9 - 12,9
			500	max. 69,5	250	7 mm RW

Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 5.10.66

En

PES 6 A 90 C 420 LS 2138

EP/RSV 300-1000 A8 B 204 DR

supersedes

9.6.64

company

Case

engine

A 451 DT

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	7,4 - 7,9	0,4			
	6 15	2,9 - 3,7 16,0 - 17,3				
200	6	1,1 - 2,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3				7	8	9	10	11
ca. 42	1015 1040 1070	9,2 7,2 4,8	without auxiliary spring			ca. 23	300	5,5	980	0
2a	1050	5,8 - 7,9	with auxiliary spring				150	19 - 21	800	0,3 - 0,5
	1100	2,5 - 3,7					300	5,2-5,8	600	0,7 - 0,9
	1200	0 - 1					400	1,5-3,2	350	0,9 - 1,1
							500	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm ³ /1000 strokes	Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	3	4	5	6	7	8	7	8	9
	980	80,0 - 83,0	1000-1015	800 700	84,7 - 87,7 86,0 - 89,0	100	7,9-8,9				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

J5

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 23.6.64

En

PE 6 P 90 C 310 RS 2125
S 2228

EP/RSV 250-1100 A1 B173/1

supersedes
company Lancia
engine 516 000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

End of pump delivery 4,4 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,5	0,5			
	6 12	2,0 - 3,0 9,5 - 10,5				
200	9	3,0 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1100	16,0	without auxiliary spring			ca. 25	250	6		
	1150	11,0					100	19 - 21		
	1200	4,0	with auxiliary spring				250	5,7-6,3		
2a	1170	6,4-10,3				300	4 - 5			
	1200	2,8-6,6				450	0 - 1			
	1300	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery idle		5 Idle stop		
Test oil temp 40°C (104°F)	rev/min	cm ³ /1000 strokes	Note changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
	1	2	3	4	5	6	7	8	9
	1100	131,5 - 134,5	1120						
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.									

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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20.9.63

J6

J6

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 A 95 D 410 RS 2108

RQ 250/1100 AB 818 DL

supersedes

company:

UWMF - Ungarn
(MAN)

engine:

D 2156 HM 6
(170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
	200	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications Control rod travel mm 10	rev/min 9	rev/min 11	Control rod travel mm 12
600	15,5-16,1	600	15,8	1100 1120 1150 1200 1240	14,0-14,4 13,8-14,3 7,0-12,4 0 - 6,0 0	570	0	150 250 350 470	6,7-8,1 5,1-7,2 2,4-4,7 0	800	15,2-15,5 14,5-14,8
Breakaway n 1140-1155=1,5 RW less than column 1 - 2!											

Torque-control travel on flyweight assembly dimension a = 0,55 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1100	88,0 - 90,0	C, col 6-7	700 500	94,5-97,5 max. 94,5	100 250	mind.18 mm RW 6,0 mm RW

Checking values in brackets

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4

Edition 13.5.70

En

PES 6 A 95 C 410 RS 2108Y RQV 200-700/1100 AB767

supersedes

company

engine

M A N
D 2156 HM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pastroke $1,7 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	8,4 - 9,0	0,5			
	6 15	4,0 - 5,0 16,6 - 17,8				
200	9	5,9 - 6,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1100 1150 1200 1280	14,0-16,5 8,2-12,8 1,4- 8,0 0	ca. 52	700 850 1000 1150	11,4-13,6 2,4- 4,6 0,4-0,8 0	ca. 12	100 200 300 500	7,0-8,0 5,2-7,4 1,8-4,2 0		

Torque control travel a = mm

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	110,5- 112,5		800	108,5-112,5	200	RW 6 mm		

Checking values in brackets

* 1 mm less control rod travel than col. 2

J8

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 18.1.65

En

PE 6 A 80 C 321 RS 2113 EP/RSV 200-1250 A1 B420D supersedes
RS 2103 B421D, B 440 D company Saviem
B 442 D engine 130 N

Values apply to fuel-injection test tubing
1 680 750 015
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
200	6	2,2 - 3,0				
	15	11,5 - 12,8				
	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca. 70	1250	16	without auxiliary spring			ca. 25	200	6	1230	0		
	1300	11,2							100	19 - 21	1000	0,4-0,6
	1340	5,6	with auxiliary spring				200	5,7-6,3	700	1,0-1,2		
	1310	8 - 10,6							350	2,5-4,2	500	1,0-1,2
	1340	4 - 7,2							550	0 - 1		
2a	1380	1,2- 3,8										
	1500	0 - 1										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)	Note changed to)	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	3	2	4	5	6	7	8	9	
1230	1260-1280	65,0-67,0	700	70,0-73,0	100	18,7-19,3	200	(ca. 6	
			500	67,5-70,5		mm RW		13,5-17,5	
			1250	mind.65,0					

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

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WPP 0C./4

En

PE 8 A 90 C 410/3 RS 2102 EP/RSV 300-1050 A 2 B 418

supersedes

company

engine

MWM

AKD 412 AV

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,45 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,9 - 6,5	0,4			
	6 15	2,3 - 3,1 14,5 - 15,5				
200	9	3,8 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control	
			4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3				7	8	9	10	11
ca. 45	1050	16	without auxiliary spring			ca. 20	300	6	1000	0
	1100	12					100	19 - 21		
	1150	8,2	300	5,7-6,3	350		1,2 - 1,8			
	1150	6 - 9	400	2,4-4						
	1200	2,8-5,6	450	0,5-3						
2a 1350	0 - 1	550	0 - 1							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1030	57,0 - 59,0	1060-1080						

Checking values in brackets

* 1 mm less control rod travel than col 2

KDA 13.11.63

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J11

JAA

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4

Edition 6.11.69

En

PES 2 A 70 C 320 RS 2100
PES 3 A 70 C 320 RS 2101

EP/RSV 375-900 A4 B417D

supersedes

company

engine

Kirlozkar
2 R
3 R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6 18	1,1 - 1,9 10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 50	900	16,0	without auxiliary spring			ca. 25	375	6,0	880	0
	930	11,2					100	19 - 21		
2a	950	7,2	with auxiliary spring				375	5,7-6,3	750	0,2-0,4
	940	8,0-10,6					480	2,0-3,9	500	0,6-0,8
	1000	2,0-3,8					600	0 - 1		
	1100	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104° F)	rev/min	Note changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
880	40,5 - 42,5	910	800	39,5 - 42,5	100	13,7-14,3	375	6,0
			650	43,0 - 46,0				
			450	41,5 - 44,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

J12

J12

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PES 6 A 80 C 310 LS 2097

EP/RSV 250-1000 A 1 B 173/1

supersedes
company
engine

Lancia
ESADELTA
401 - 070

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

End of pump delivery 4,6 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5				
	15	9,1 - 10,3				
200	9	0,9 - 1,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min 11
	mm 2	mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	
ca. 52	1000	16	without auxiliary spring			ca. 22	250	6	
2a	1050	10				with auxiliary spring			
	1080	5,8	200	8,4-10,2					
	1060	7 - 10	250	5,7- 6,3					
	1100	2,3- 4,8	300	3,5- 4,8					
	1050	0,5- 1,9	350	0,7- 3,3					
	1200	0,3- 1	420	0 - 1					

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
ca.	10 mm RW							

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

J13

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KDA 24.9.63

J13

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
Edition 23.10.64

En

PES 4 A 80 C 410 RS 2094

RQ 250/1500 AA 382 D

supersedes
company: Daimler-Benz
engine: OM 314

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,0 - 4,4	0,3			
	6 15	0,8 - 1,7 10,1 - 11,3				
200	9	2,7 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm rev/min 5 6		Setting point rev/min 7	Control rod travel mm 8	Test specifications Control rod travel mm rev/min 9 10		rev/min 11	Control rod travel mm 12
600	15,6-16,0	600	15,8	1500	12,8-13,1	530	0	100	7,1-8,1	500	15,8-16,2
				1520	7,0-13,1			200	5,6-7,8	800	15,2-15,6
				1540	0,5-10,0			300	3,0-5,4	1100	14,4-14,8
				1580	0 - 4,0			400	0 - 1,5	1400	13,1-13,5
				1610	0			430	0	1480	13,1

Torque-control travel on flyweight assembly dimension a = 0,9 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1480	57,0 - 59,0	500	1200	58,5 - 61,5	-	-
			1000	58,0 - 61,0		
			500	56,0 - 59,0		

Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

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VDT-WPP 001/4
Edition 16.2.65

En

PES 4 A 80 C 420 LS 2093 EP/RSV 200-1000 A 1 B 46

supersedes
company
engine Bukh A/S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15 + 0,1$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,3			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca. 55	1000	16	without auxiliary spring			ca. 24	200	6	980	0		
	1050	11,4					100	19 - 21			400	0
	1090	5,8										
	1050	10,0-12,4	300	1,7-3,8								
	1100	3,0- 6,4			350	0 - 2,3						
	1150	0 - 2,5					400	0 - 1,0				
1200	0 - 1,0	with auxiliary spring										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)	Note	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
90L	57,5 - 59,5	1010-1020	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

BUKH

En

PES ⁶/₄ A 80 C 420 LS 2093

EP/RSV 200-900 A 1 B 197 D
EP/RSV B 46 (B)

supersedes

company BUKH A/S
engine Kalundborg
4 K 105

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,6 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3				7	8	9	10	11
ca. 43	900	16	without auxiliary spring			ca. 16	200	6	880	0
	920	13					100	19 - 21		800
	950	7	200	5,7-6,3	0,5-0,7					
2a	950	4,8-8,6	with auxiliary spring				300	3,2-4,8		0,7-0,9
	1000	1,2-3,3					400	0 - 3		0,9-1,1
	1100	0 - 1,0	500	0 - 1						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm ³ /1000 strokes	Note, changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
	1	2	3	4	5	6	7	8	9
	880	57,5-59,5	910-920	700 500	61,0-64,0 62,7 - 65,7	100	21 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps (1A) and Governors

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VDT-WPP 001/4
Edition 5.10.66

En

PES 4 A 80 B 420 LS 401 EP/RSV 300-950 A2 A 94 D
PES 4 A 80 C 420 LS 2054 EP/RSV 300-950 A2 A 137 D

supersedes 19.2.60
company Case
engine 730/1900
731 c

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control	
	mm	mm rev/min	4	5	6		rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 45	970	16,0	without auxiliary spring			ca. 24	300	6,5	950	0
2a	1050	11,3					with auxiliary spring			100
	1130	5,6	300	6,2-6,8	650	0,8-1,1				
	1100	6,2-9,0	400	2,8-4,3	400	0,9-1,2				
	1150	3,0-5,3	560	0 - 1						
1300	0 - 1									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limitat Note changed to 1 rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle 5		4a Idle stop	
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
930	67,5-69,5	950-965	650 500	74,5 - 77,5 73,0 - 77,0	100	7,5-8,6		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 10.11.67

En

PES 6 A 80 C 420 LS 2054 EP/RSV 300-925A 2 B185 DR

supersedes

company

engine

Case

A 34007

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 43	940	9,4	without auxiliary spring			ca. 26	300	5,5	905	0
	980	7,0					150	19 - 21		
2a	1010	5,0	with auxiliary spring				300	5,2-5,8	400	0,8-1,1
	970	7,0-8,0					400	2,0-4,6		
	1050	2,2-3,6					540	0 - 1		
	1130	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
905	64 - 66	925-940		650 500	69,0 - 72,0 67,0 - 70,0	100	7,7 - 8,6		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 23.11.64

En

PES 6 A 80 C 420 LS 2054

EP/RSV 300-900 A 2 B 216 DR

supersedes

company

Case

engine

A 401 DU

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 41°	915	10,0	without auxiliary spring			ca. 24	300	5,5	880	0
	950	7,8					100	19 - 21		
2a	990	5,0	with auxiliary spring				300	5,2-5,8	600	1,1-1,3
	960	6,8-7,6					400	1,8-3,2	400	1,2-1,5
	1020	2,4-3,9					550	0 - 1		
	1100	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
880	70,0-72,0	900-915	650 500	78,5-81,5 77,5-81,5	100	7,7-8,7			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 14,3,68

En

PES 6 A 85 C 420 LS 2054 EP/RSV 300-1000 A 2 B 240 DR

supersedes 16.5.66
company
engine Case
A 451 D

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	6,5 - 7,0	0,4			
	6 15	2,3 - 3,1 14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.41	1015	9,2	without auxiliary spring			ca.22	300	5,5	980	0
	1040	7,2					100	19 - 21	800	0,4-0,6
2a	1060	5,6	with auxiliary spring				300	5,2-5,8	700	0,5-0,7
	1030	7,6-8,4					400	1,2-3,2	400	0,5 - 0,7
	1070	4,2-5,3					500	0 - 1		
	1120	1,1-2,6								
	1160	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40 C (104 F)	Note changed to 1 rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
980	75,0-77,0	1000-1015	800 600 1090	79,5-82,5 78,0-82,0 8,5-18,5	100	8,0-8,9			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4
Edition 16.5.66

En

PES 4 A 85 C 420 LS 2054 EP/RSV 300-1000 A 2 B 210 DR

supersedes 8.10.63
company C a s e
engine A 301 DF

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	6,5 - 7,0				
	6 15	2,3 - 3,1 14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.44	1015 1040 1060	9,2 7,2 5,6	without auxiliary spring			ca.24	300	5,5	980	0
2a	1030 1020 1160	7,6-8,4 1,1-2,6 0,3-1,0				with auxiliary spring				100
				300	5,2-5,8				700	0,5-0,8
				400	1,2-3,2				400	0,5-0,8
						520	0 - 1			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104 F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
980	73,0 - 75,0	1000-1015	800 600	78,5-81,5 78,0-82,0	100	7,9-8,9		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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J21

J2 4

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4

En

PES 6 A 85 C 420 LS 1054 EP/RSV 300-1000 A 2 B 191 DR

supersedes

company

engine

Case

A 451 D

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel		Fuel delivery		Difference		Control rod travel		Fuel delivery		Spring pre-tensioning (torque control valve)
	mm	②	cm ³ /100 strokes	cm ³ /100 strokes	mm	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	mm	mm
1000	9		6,5 - 7,0								
	6		2,3 - 3,1								
	15		14,0 - 14,8								
200	6		1,3 - 2,2								

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

① Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			④ Control lever deflection in degrees	Lower rated speed		③ Torque control	
	mm	mm rev/min					rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 41	1015	9,2	without auxiliary spring			ca. 22	300	5,5	950	0
	1040	7,2					100	19 - 21	800	0,4-0,6
	1060	5,6	with auxiliary spring					700	0,5-0,7	
②a	1030	7,6-8,4				300	5,2-5,8	400	0,5-0,7	
	1120	1,1-2,6				400	1,2-3,2	400	0,5-0,7	
	1160	0,3-1	500	0 - 1						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limit Note changed to rev/min	③a Fuel delivery characteristics		Starting fuel delivery idle		④a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
980	73,0 - 75,0	1000-1015	1080	8,5 - 18,5	100	8,0 - 9,1		
			800	78,5 - 81,5				
			600	78,0 - 82,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

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J22

J22

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PES 4 A 85 C 420 LS 2054

EP/RSV 300-1000 A 2 B 134 D

supersedes

company
engine

J.I. Case
A-301 DF

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	6,5 - 7,0				
	6 15	2,3 - 3,1 14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees	Lower rated speed		3 Torque control	
	mm	mm rev/min	4	5	6		rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 44	1015 1050 1080	9,5 7,0 4,8	without auxiliary spring			ca. 24	300	5,5	980	0
2a	1050 1150 1200	6,5-7,4 0,6-2,1 0,3- 1				with auxiliary spring				100 300 400 500

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
980	75,5 - 77,5	1000-1015	700 600 1090	80,5 - 84,0 79,5 - 84,0 16,5 - 24,0	100	8,4 - 9,5		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 5.10.66

En

PES 4 A 85 B 420 LS 445 EP/RSV 300-450 A 5 A136D
PES 4 A 85 C 420 LS 2054

supersedes 21.9.64
company Case
engine 830/1700
831

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	6,5 - 7,0	0,4			
	6 15	2,3 - 3,1 14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 torque control	
			4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 44	865 880 920	9,2 8,0 5,2	without auxiliary spring			ca. 26	300	5,5	830	0
2a	880 950 1050	7,7-8,5 3,0-4,2 0 - 1				with auxiliary spring				100 300 400 500

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle 5		4a die stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
830	74 - 76	850 - 865	600 450	77,0 - 80,0 75,0 - 79,0	100	8,4-9,5		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 9.6.64

En

PES 4 A 85 C 420 LS 2054

EP/RSV 300-900 A 2 B 134 DR

supersedes

company

engine

Case
A 301 DH

See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BUC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,5 - 7,0	0,4			
	6 15	2,3 - 3,1 14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 40	915	9,4	without auxiliary spring			ca. 23	300	5,5	880	0
	950	7,0					150	19 - 21		700
2a	980	4,7	with auxiliary spring				300	5,2-5,8	500	0,6-0,8
	950	6,5-7,4					400	1,4-3,2	400	0,6-0,8
	1000	4,1-4,3					500	0 - 1,0		
	1050	0,3-2,0								
	1100	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104 F)		6 Rotational-speed limit Note changed to)		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9			
880	74,2 - 76,2	900 - 915	650	78,7-81,7	100	7,9 - 8,9					
			500	75,5-79,5	High idle speed 990	1,4 - 2,4					

Checking values in brackets

* 1 mm less control rod travel than col 2

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K1

KA

As opposed to VDT-WPP 001/4 - first supplement - the special setting is as follows:

- | | | |
|---|------------------------|-------------|
| 1. Governor-spring adjustment | corresponds to | (1) |
| 2. Pre-adjustment of full-load delivery and noting down of control-rod travel | roughly corresponds to | (2) |
| 3. Screw in torque-control retainer until control-rod travel is 1 mm more than that measured under 2. | roughly corresponds to | (3) |
| 4. Final adjustment of full-load delivery by screwing back full-load stop screw | roughly corresponds to | (2) |
| 5. Adjustment of breakaway | corresponds to | (6) |
| 6. Testing of torque control and fuel-delivery characteristics | roughly corresponds to | (3)
(3a) |
| 7. Idle adjustment | corresponds to | (4) |
| 8. Testing high idle
Test starting fuel delivery and adjust with control-rod stop | corresponds to | (6a) |

Please consult test instructions as regards information given in parentheses.

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

En

PES 4 A 80 C 420 LS 2054

EP/RSV 300-850 A5B 132 d

supersedes

company

Case

engine

730/1700

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers*

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control Control rod travel	
	mm	mm rev/min	4	5	6		rev/min	mm		rev/min
1	2	3	4	5	6	7	8	9	10	11
ca. 49	860 900 925	10,0 7,0 5,0	without auxiliary spring			ca. 24	300	5,8	830	0
2a	900 950 1050	6,6-7,5 3,0-4,2 0,3-1,0					with auxiliary spring			
			300	5,5- 6,1	400	0,8-1,0				
			400	1,5- 3,5	520	0 - 1,0				

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104 F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
830	71,5 - 73,5	850-865	600 500 935	76,0-79,0 74,5-78,5 10,5-20,0	100	7,5-8,6		

Checking values in brackets

* 1 mm less control rod travel than col 2

25.3.63

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K3

K3

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 5.10.66

En

PES 6 A 80 B 420 LS 445
PES 6 A 80 C 420 LS 2054

EP/RSV 300-800 A5 A 135 D ^{supersedes} 24.4.63
company C a s e
engine 900 C
931

Test with case overflow valve!
Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 6,0	0,4			
	6 15	2,2 - 3,0 11,5 - 12,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min 10	Control rod travel mm 11
	2	3	4	5	6		8	9		
ca.44	815	9,6	without auxiliary spring			ca.23	300	5,5	780	0
	840	7,5					100	19 - 21		
2a	870	5,1	with auxiliary spring				300	5,2-5,8	600	0,6-0,9
	850	6,5-7,3					400	1,0-3,0	400	0,8-1,1
	900	2,7-4,0					500	0 - 1		
1000	0 - 1									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9		
780	65,5 - 67,5	800-815	600 450	70,5 - 73,5 69,0 - 74,0	100	7,9 - 8,9				

Checking values in brackets

* 1 mm less control rod travel than col 2

K4

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K4

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4
Edition 18.3.65

En

PES 6 A 85 C 410 RS 2000

RQ 250/1200 AA 510 D

supersedes

company:

Kaelble

engine.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,5 - 7,0	0,4			
	6 15	2,3 - 3,1 14,0 - 14,8				
200	6	1,3 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1100	14-14,8	1100	14,4	1200 1230 1260 1310	14,2-14,4 5,4-12,2 0 - 7,5 0	520	0	100 200 300 420	7,0-8,0 5,7-7,8 3,1-5,4 0	500 600 800 900	16,0-16,1 15,7-16,0 14,8-15,3 14,4-14,8

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm Control rod travel 7
1180	80,0 - 82,0	500	800 500	83,0 - 86,0 82,0 - 85,0	-	-

Checking values in brackets

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

En

PES 4 A 90 B 420 RS 2010 EP/RSV 200-900 A4A 130 D

supersedes

company: Allis-Chalmers
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9 - 6,4	0,4			
	6 15	2,3 - 3,1 14,2 - 15,5				
200	9	3,7 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel		
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min mm 5	Control rod travel mm ④	Degree of deflection of control lever 7	rev/min mm 8	Control rod travel mm ③	rev/min mm 10	①
ca. 55	900	16					ca. 23	200	6	880	0
	940	12		without auxiliary spring				100	19 - 21	700	0,1-0,3
	980	6,6						200	5,7-6,3	500	0,6-0,8
	940	11 - 13						350	2,2-4,1	300	0,8-1
	980	4,8-8,2		with auxiliary spring				550	0 - 1		
	1040	1 - 3,4									
	1100	0,3-1									

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤		
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	④a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
ca.	10 mm RW	910 - 920							
ca. 88	cm ²								

Checking values in brackets

* 1 mm less control rod travel than col. 2

KDA 9.11.62

K6

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K6

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 18.2.69

En

PES 3 A 75 C 320/3 RS 1236 EP/RSV 350-1250 A 2 B 531 DR

supersedes
company M W M
engine D 325 - 3
(Dieter)
(50 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	6,2 - 6,6	0,4			
	9 15	3,2 - 3,7 8,5 - 9,5				
200	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed Degree of deflection of control lever rev/min	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control	
	mm	mm rev/min	4	5	6		rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 48	1250 1300 1350	16,0 11,7 6,8	without auxiliary spring			ca. 20	350	6,0	1250	0
2a	1330 1400 1540	7,4-10,2 3,0- 4,8 0 - 1				with auxiliary spring				150 350 500 700

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1250	53,0 - 55,0	1270	800 500	49,0 - 52,0 45,0 - 48,5			350	6,0

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 28.3.69

En

PES 2 A 70 C 310 RS 1233 EP/RSV 200-1250 A1B5527 L
PES 4 A 70 C 410 RS 1234 EP/RSV 200-1250 A1B5527 L

supersedes
company
engine
Couach
DX 2
DX 4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	6,5 - 7,0				
	6 18	1,2 - 2,3 10,9 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3				7	8	9	10	11
ca. 72	1250	16,0	without auxiliary spring			ca. 27	200	6,0	500	0
	1300	11,4					100	19 - 21		
	1350	4,7	with auxiliary spring			200	5,7-6,3	250	1,2 - 1,8	
2a	1320	5,2- 7				300	2,6-4,2			
	1370	3,4- 4				400	0 - 1,8			
	1460	0 - 1	470	0 - 1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9
1000	38,5 - 40,5	1250-1280			100	64,5-74,5		

Checking values in brackets

* 1 mm less control rod travel than col 2

K8

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k3

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

VDT-WPP 001/4
Edition 27.2.67

En

PES 3 A 70 C 410/3 RS 1183
PES 4 A 70 C 410/3 RS 1183
PES 6 A 70 C 410/3 RS 1197

EP /RSV 425-1500 A5 B486DL

supersedes
company K H D
engine F 3
F 4 L 811 D
F 6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	(2)					
1000	9	3,9 - 4,4	0,3			
	6 12	1,5 - 2,7 5,9 - 6,9				
200	6	0,3 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 72	1500	16,0	without auxiliary spring			ca. 26	425	6,0	1480	0 - 0,3
	1560	11,2					200	19 - 21	1100	
(2a)	1620	5,6	with auxiliary spring				425	5,7-6,3	800	1,4-1,6
	1600	6,0 - 9,0					550	2,9-4,4	600	
	1650	2,6 - 5,0					760	0 - 1		
1780	0 - 1									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 49°C (104°F)		(6) Rotational-speed limit	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min 1	cm ³ /1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1500	43,0 - 45,0	1520						

Checking values in brackets

* 1 mm less control rod travel than col 2

K10

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K10

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4
Edition 30.9.66

En

PES 3 A 70 C 310 RS 1180 EP/M 60 A 158 DL

supersedes
company **Lamborghini**
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **1,9 + 0,1** mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
1000	12	6,5 - 7,0	0,4			
	6	1,2 - 2,3				
	18	10,0 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in:

B. Governor Settings

Testoil-ISO 4113

Torque control travel mm	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
1,2+0,1	500-480	10	580	8,1	-	-	600*	8,0-8,1	100	9,2-9,4
*							630	5,6-7,6	200	9,2-9,4
							680	1,5-5,3	250	8,7-9,2
							750	0 -2,6	325	8,1-8,5
									450	8,1

control rod travel test (cols 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	mm cm ³ /1000 strokes
1	2	3	4	5	6	7	8	8
1000	580	33,0 - 35,0	-	-	-			

* Set breakaway between 600-620 mm water column by inserting washers under the governor spring.

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 4.2.69

En

PES 2 A 85 C 310 RS 1065 EP/RSV 250-900 A1 B164L
PES 2 A 85 C 310 RS 1178

supersedes 14.2.67
company Motori VM
engine VM 25 DA
VM 30 DA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,7 + 0,05 mm (from BDC) RW 21 **

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	5,8 - 6,3	0,4			
	6 12	2,3 - 3,5 9,5 - 10,5				
200	9	3,4 - 4,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

250 - 900

Testoil-ISO 4113

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 50	900 960 1000	16,0 10,8 5,4	without auxiliary spring			ca. 24	250	6	880	0
2a	980 1050 1150	5,6-9,6 0,9-3,2 0 - 1					with auxiliary spring			100
			250	5,7-6,3	300	1,2-1,8				
			350	1,0-3,4						
						450	0 - 1			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full road stop Test oil temp 40°C (104°F)		6 Rotational speed limit Note changed to rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
880	80,5-82,5	910			100	12,5-15,5		
** Port closing difference between control-rod travel 10.5mm and 21 = 1.5-2° camshaft.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

K12

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K 12

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 3.74

En

PES 4 A 70 C 410 RS 1177 Z EP/RSV 250-1500 A 2 B 490 L

supersedes 17.10.69
company 21.11.69
engine Arona
C 490

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	5,5 - 6,0	0,3			
1000	9	3,0 - 3,8				
200	9	1,8 - 2,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min 10	Control rod travel mm 11
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9		
ca. 58	1500 1560 1610	16 10,6 6	without auxiliary spring with auxiliary spring			ca. 18	250	6	1480	0
2a	1600 1650 1700 1800	5,4-8,8 2,2-4,8 0 -2,7 0 - 1				100 250 300 400 550	19 - 21 5,7-6,3 4,7-5,3 1,2-3,2 0 - 1	500 310	0 1,2-1,8	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop rev/min Control rod travel mm 9	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1480	30,0-32,0	1530-1540*						

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

K13

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K13

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 5.71

En

PES 3 A ⁷⁰ C 410 RS 1177 EP/RSV 250-100A 1 B 12 L
⁸⁰
 PES 2 A ⁷⁰ C 310 RS 1176
⁸⁰

supersedes 1.71
 company Lamborghini
 engine FL 3, 45
 FL 2, 30

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 7 Ø cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery 8 Ø cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm cm ³ /1000 H 6
1000	12	6,5 - 7,0	0,4	9	5,5 - 6,0	0,4
	6 18	1,2 - 1,9 10,9 - 11,9		6 15	2,2 - 3,0 11,5 - 12,8	
200	6	0,7 - 1,5		6	1,3 - 2,2	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2		Intermediate rated speed 4 5 6			4 Control-lever deflection in degrees 7	Lower rated speed rev/min 8		Control rod travel mm 9		3 Torque control rev/min 10	Control rod travel mm 11	
	3	mm rev/min					rev/min	mm	rev/min	mm			
ca. 55	1000	16,0	without auxiliary spring			ca. 25	250	6,0	980	0	400	0	1,2 - 1,8
	1060	10,5					100	19 - 21					
2a	1100	5,7	with auxiliary spring				250	5,7-6,3	300	1,2 - 1,8			
	1100	3,5-7,8					300	3,7-4,8					
	1150	0,5-3,2					450	0 - 1,0					
	1250	0,3-1,0											

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		cm ³ /1000 strokes 2		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		cm ³ /1000 strokes 5		Starting fuel delivery Idle rev/min 6		cm ³ /1000 strokes 7		5 Idle stop rev/min 8		Control rod travel mm 9	
7 Ø	1000	ca. 44															
8 Ø	1000	ca. 58,5			1030												

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

Edition 10.68

En

PES 3 A 70 C 320 RS 1160 EP/RSV 450-1400 A 2 B 451 DR

supersedes 12.65
company Indenor/Peugeot
engine KDP 88
(Compressor)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,3 - 5,6	0,3			
	9	2,6 - 3,3				
	18	8,9 - 9,7				
200	9	2,0 - 2,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 65	1400	12,0	without auxiliary spring			ca. 31	450	5,5	1380	0
	1450	9,4					300	19,0-21,0	1140	0
	1500	6,4	450	5,2- 5,8	1000		0,4-0,6			
	1450	8,7-9,9	550	3,4- 4,4	800		0,8-1,1			
	1500	5,1-7,3	650	0,8- 2,9	550		0,8-1,1			
	1600	1,1-3,3	800	0 - 1,0						
2a	1700	0,3-1,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to 1 rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1380	32,5-34,5	1410-1430+	900	25,0-28,0	100	5,9-6,9	450	7,5-11,5	
			500	21,5-24,5			(Control lever ca 29°)	RW 7,4)	
+At n = 1450 control rod must have moved out of full-load position by 1.0-2.0 mm CRT.									

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

K15

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KAS

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 10.6.65

En

PES 6 A 75 C 320/3 RS 1150 EP/RSV 300-1300 A2 B 398 DR
RS 1149 EP/RSV 300-900 A7 B 407 DR

supersedes
company MWM
engine AKD 110,5 B
AKD 110,5 V

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	9	3,2 - 3,7	0,3			
	6	0,9 - 1,7				
200	15	8,5 - 9,5				
	9	1,9 - 2,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 49	1300	16	without auxiliary spring			ca. 18	300	6		
	1350	11,7						19 - 21		
	1400	6,7	5,7-6,3							
2a	1380	7,4-9,8	with auxiliary spring			700	500	1,5-3,6		
	1480	1,8-4,1					0 - 1			
	1600	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery Idle		5	4a Idle stop	
Test oil temp 40°C (104°F)	rev/min	cm ³ /1000 strokes	Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	3	4	5	6	7	8	9
	1280	55,5-57,5	1310-1330						

Checking values in brackets

* 1 mm less control rod travel than col 2

K17

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K17

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

VDT-WPP 001/4
Edition 15.2.72

En

PES 4 A 90 C 320 RS 1145 EP/RSV 200-700 A4 B22DR (1)
80 200-725 (2)

supersedes 18.5.67
company I H C
engine TD 14 (1)
D 264 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15±0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 9 Ø cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery 8 Ø cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	15	13,6 - 14,3	0,5	9	4,1 - 4,5	
	6	2,3 - 3,1		6 15	1,2 - 2,0 10,3 - 11,4	
200	9	3,2 - 4,1		9	3,9 - 4,4	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control lever deflection in degrees 7	Lower rated speed		③ Torque control	
	mm 2	mm/rev/min 3	4	5	6		rev/min 8	mm 9	rev/min 10	mm 11
ca. 44	700	16,0	without auxiliary spring			ca. 22	200	6,0	680	0
	750	10,0					125	19 - 21		
②a	775	6,0	with auxiliary spring				200	5,7-6,3	450	1,2 - 1,4
	750	9,0-11,8					350	2,3-4,6	300	1,7 - 1,9
	800	2,5- 4,6					450	0 - 2,5		
	900	0 - 1					530	0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
ca.	10 mm RW	720						
725 (ca.)	24,5-27,5 RW 9,8)	730	225	20,5-24,5 (ca. RW 7,6)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

K18

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K18

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 17.3.66

En

PES 2 A 60 C 110 RS 1144

EP/RSV 400-1250 A 2 B 435 DL

supersedes
company John-Deere-Lanz
engine 204

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,7 + 0,1$ mm (from BDC) RW 9
 $2,5 - 2,7$ RW 21

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	4,5 - 5,0	0,3			
	6	0,6 - 1,2				
	9	2,4 - 3,2				
200	6	0,3 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Testoil-ISO 4113

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 48	1250 1300 1350	16 12 7	without auxiliary spring			ca. 21	400	6	1230	0
2a	1300	11,2-12,6				with auxiliary spring			150	19 - 21
	1400	2,8- 4,8	400	5,7-6,3	900				0,8 - 1,0	
	1550	0 - 1	550	2,2-4,0	500				0,8 - 1,0	
						750	0 - 1			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5a Idle stop	
Test oil Temp. 40°C (104°F)	Note changed to)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	3	4	5	6	7	8	9		
1230		1270	45,0 - 47,0	900 500	47,5 - 50,5 47,0 - 50,0	1320	4,6-5,6 mm RW	400	6

Checking values in brackets

* 1 mm less control rod travel than col 2

K19

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K19

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4
Edition 17.4.64

En

PES 2 A 60 C 110 RS 1114

EP/RSV 400-1250 A 2 B 419

supersedes

company

engine

John-Deere-Lanz
LKA 53 - 18 P
tractor T1C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,7 + 0,1$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1000	12	4,5 - 5,0				
	6 18	0,5 - 1,2 8,3 - 9,1				
200	6	0,3 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.46	1250 1280 1340	16 13,2 6,4	without auxiliary spring			ca.20	400	6	1230	0
2a	1350 1400 1500	3,7 - 7 1,4 - 3,4 0,3 - 1,0				with auxiliary spring				150 400 500 600

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp 40°C (104°F)	Note	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9			
1230	33,0-35,0	1260-1270									

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

K20

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K20

Test Specifications Fuel Injection Pumps and Governors

En

PES 4 A 50 D 410 RS 1127 EP/MZ 60 A 171 DL

supersedes
company Cispalsa
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
1000	12	1,9 - 2,3	0,3			
200	9	0,7 - 1,2				
	9	0,4 - 1,0				

Adjust the fuel delivery from each outlet according to the values in:

B. Governor Settings

Torque control travel mm	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm	Vacuum mm w c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
0,6±0,1	500-480	10	-	-	-	-	680	12,6*	200	13,2
*							820	6,6-9,0	450	12,9-13,2
							900	3,6-6,7	550	12,6-12,9

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	cm ³ /1000 strokes	rev/min	Vacuum mm wat col	mm cm ³ /1000 strokes
1	2	3	4	5	6	7	8	8
1700	680	28,2 - 29,2	250		6,2 - 8,2 dispersion max. 1,5	0	0	6,0-6,5
* Set breakaway between washers under the governor spring.			700					

Checking values in brackets

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4
Edition 22.1.65

En

PE 12 A 75 C 520 RS 1126 EP/RSV 300-900 A7B427

supersedes
company **KHD**
engine **A 12 L 714**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **1,9 + 0,1** mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,7 - 7,2				
	9 15	3,8 - 4,3 9,0 - 10,2				
250	9	2,5 - 3,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 60	900	16	without auxiliary spring			ca. 27	300	6	880	0
	940	11					100	19 - 21		
	970	6,4	300	5,7-6,3	450		340	1,2 - 1,8		
	1000	2 - 4	360	2,7-4,2						
②a	1100	0,3- 1	with auxiliary spring			460	0 - 1			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40° C (104°F)		⑥ Rotational-speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
880	72,5 - 74,5	910 - 920					300	6

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

K22

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K22

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 DAI 5,6 c
Edition 3.64

En

PES 6 A 80 B 410 RS 2014 RQ 300/1425 A 405 D
A 454 D

supersedes 10.62
company Daimler-Benz
engine OM 322

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,5 - 5,0	0,3			
	6 15	1,2 - 2,0 10,4 - 11,8				
200	6	0,4 - 1,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control			
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12		
1400	14-14,8	1400	14,4	1425	14-14,4	550	0	150	7-8,1	500	15,7-16,4		
				1450	11,6-14,4			200	6,2-8,1			650	15,3-15,8
				1500	6 - 11,5			300	3,8- 6			800	14,8-15,3
				1550	0 - 8			400	0 - 2,2			1000	14,4-14,6
				1660	0			450	0				

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/ mm 7
1000	53,5 - 55,5	*...A454D additional intermediate- speed stop	500 700 1400	53,0 - 57,0 53,5 - 56,5 57,5 - 61,5	100 350	mind. 7,9 2,9 - 3,4

Checking values in brackets

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 VOB 5,0a
2. Edition

En

PES 6 A 90 ^C_D 320 RS 2319, Y, V RQV 200-1250 AB 743 R
300-1250

supersedes 1.75
company Volvo - BM
engine TD 50 B

Values apply to fuel-injection test tubing
1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1 -RW 9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,4 - 6,8	0,4			2,5+0,1 ** (max. 2,2-2,9)
	6	0,3 - 0,9				
	9	2,6 - 3,5				
**	9	0,8 - 1,7				

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQV 200 - 1250 AB 743
300

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1250 1300 1350 1430 1530	15,0-18,0 11,0-15,0 6,6-12,0 0 - 7,0 0	-	-	-	ca. 12	250 350 450 550 670	6,6-8,0 4,3-6,5 1,8-3,4 0,8-2,1 0	1200	8,0

*** Port closing difference between control-rod travel 9 mm and 21 = 1,2+0,1mm camshaft.

Torque control travel a = mm

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
2319: 900	52,0 - 54,0	1260	500	41,5-44,5	60 200 300	min. 18mmRW 5,25-11,25	**	
2319Y 900	42,0 - 44,0	1260			dispersion max. 1,5			
2319V 900	47,0 - 49,0	1260			1350 12,25-17,25 dispersion max 3)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.77

L3

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Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 KAE 14,3 i
Edition 1.65

En

PE 6 B 90 E 410 S 1107, z RQ 300/650 B 501

supersedes 12.5.60
company: Kaelble
engine: GN 130 s
GN.-Lok II

Pumps S 1341 and S 1341 z must all be set to the delivery of the "z" version and "z" must be stamped on the nameplate.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,95 \pm 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	12	11,1 - 13,2	0,5			
	9	6,1 - 8,0				
	18	21,2 - 23,6				
200	9	5,2 - 7,1				

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm rev/min 5 6		Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min Control rod travel mm 9 10		rev/min 11	Control rod travel mm 12
450	15,9-16,1	450	16	650	15,8-16	450	0	200	7,2-8,1		
				660	12,6-16			250	4,8-7,1		
				680	4,8-12			300	1,4-4,1		
				700	0 -7,4			350	0		
				730	0						

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/ Control rod travel mm 7
600	139,0 - 142,0	600				
600	127,0 - 130,0					

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 4,6a

Edition 3.64

En

PES 6 A 70 B 410 RS 22

RQV 250 - 1400 A 25 D

supersedes

1.9.53

company:

Daimler-Benz

engine

OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9 + 0,1$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6 18	1,2 - 1,9 11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	1a	Degree of deflection of control lever 4	rev/min mm 5	Control rod travel mm 6	4	Degree of deflection of control lever 7	rev/min mm 8	Control rod travel mm 9	3	10	11
66±1,5	1380	14,6-16,0	1a					10±1,5	100	7,4-9,2	3a	1000	0
	1420	11,4-14,6	2a				250		5,6-7,4	900		0,1-0,4	
	1460	7,8-11,2					400		2,6-4,4	700		0,6-0,9	
	1540	0 - 4					600		1,2- 3	500		0,8-1,0	
	1590	0					870		0				

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1000	44,5 - 46,5	1400-1420	600 1380	46,5 - 49,5 45,5 - 49,5	100+ 20	7,9-9,9	1200	

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

L5

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 5,1 f
Edition 3.64

En

PES 6 A 80 B 410 RS 174
1062

RQV 250 - 1500 A 49 D

supersedes 1.5.61
company. Daimler-Benz
engine. OM 321 mA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,3			
	6 15	1,2 - 2,0 10,3 - 11,4				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
65±1,5	1500	15 - 18				10±1,5	100	6,5-8	1000	0
	1540	11,4-15,4					250	4 - 6	900	0,2-0,4
	1620	4,4-10,6					400	2,6-3,4	800	0,5-0,7
	1720	0 - 4,4					600	1,6-3,4	600	0,9-1,1
	1790	0					920	0	400	1,0-1,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	54,5-56,5	1510-1530	500 700 1500	57,0-60,0 57,0-60,0 56,0-59,0	100	mind.7,9	1300	

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

L6

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L6

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 DAI 4,6 x
Edition 3.64

En

PES 6 A 70 B 410 RS 64
1034

RQV 250 - 1400 A 140 D

supersedes 15,8.58
company: Daimler-Benz
engine OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6 18	1,2 - 1,9 11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel			
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min Control rod travel mm 6	④	Degree of deflection of control lever 7	rev/min Control rod travel mm 9	③	rev/min 10	mm 11	①
65±1,5	1400	15 - 17,6					10±1,5	150	7,4- 8	1420	0	
	1440	11,6-15						250	5,4-7,4	1200	0,4-0,8	
	1520	4,4-9,6						400	3,6-4	800	0,8-1,0	
	1600	0 - 4,2						700	1,7-3,4	500	0,8-1,0	
	1660	0						950	0			

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	43,5-45,5	1400-1420	500 1400	44,5-47,5 45,5-48,5	100	mind. 7,9		

Checking values in brackets

* 1 mm less control rod travel than col 2

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L7

L7

Test Specifications Fuel Injection Pumps ② and Governors

En

PES 6 A 70 B 410 RS 64/7 RQ 250/1125 A 301 d
(AV 4541 d)

supersedes
company: Daimler-Benz
engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,4			
	6 18	1,2 - 1,9 10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation Setting point rev/min 3			Control rod travel mm 4		Test specifications rev/min 5		Idle speed regulation Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
1050	14,6-15,4	1050	15	1125	14,6-15	520	0	420	0	400	0 - 1,3	400	15,7- 21									
				1130	13,4-15			400	0 - 1,3	500	15,2-15,7											
				1160	5 - 12,2			300	3 - 5,3	550	15 - 15,4											
				1200	0 - 6,2			200	5,4-7,7													
				1240	0			100	6,8-8,1													

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		cm ³ /-1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		cm ³ /-1000 strokes 5		Starting fuel delivery Idle speed rev/min 6		cm ³ /1000 strokes/mm 7	

Checking values in brackets

KDA 14.2.63

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

En

PES 4.150 B 110 RS 17/7 EP/M 60 A 44

supersedes
company
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,1 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	2,4 - 2,7	0,3		0,8	
	9 18	1,4 - 1,6 4,7 - 5,2				
200	9	0,9 - 1,4				

Adjust the fuel delivery from each outlet according to the values in:

B. Governor Settings

Torque control travel mm 1	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	Vacuum mm w c 4	Control rod travel mm 5	Vacuum mm w c 6	Control rod travel mm 7	Vacuum mm w c 8	Control rod travel mm 9	Vacuum mm w c 10	Control rod travel mm 11
	500-420	10	-	-	-	-	+250 400 600 900	20,2-21 16 5,6-7,6 0 -0,5		

control rod travel test (cols 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104 F)			Fuel delivery characteristics			Idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm ³ /1000 strokes 8
rev/min 1	Vacuum mm wat col 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat col 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat col	
1300		24,5 - 25,5						

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

En

PES 6 A 70 B 410 RS 64

EP/RSV 250-1300 A1A 364 D

supersedes

company

Daimler-Benz

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control) valve mm
1	2	3	4	2	3	6
1000	12	6,5 - 7,0	0,4			
	6 18	1,2 - 1,9 10,9 - 11,9				
200	6	0,7 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever mm	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees	Lower rated speed		3 Torque control	
	mm	mm rev/min	4	5	6		rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 72	1300	16,0	without auxiliary spring			ca. 26	250	6	1280	0
2a	1340	11,6					with auxiliary spring	100	19 - 21	1200
	1380	5,8	160	8,6- 21	1100	0,4-0,6				
	1360	6,9-10,5	250	5,7-6,3	350	0,5-0,7				
	1420	1,6- 4,2	400	1,8-3,8						
1500	0 - 1	600	0 - 1							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1280	51,0-53,0	1210-1230	900 500	53,5 - 55,5 46,5 - 48,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4:113

L10

L 10

BOSCH

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Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

VDT-WPP 001/4 DAI 4,4 a
Edition 3.64

En

PES 3 A 85 B 410 RS 2030 EP/RSV 250-1150 A 4 A 373
A 393

supersedes 4.62
company Daimler-Benz
engine MB 863

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC) RW 9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	5,5 - 5,9	0,4			
	6	2,4 - 3,2				
	12	8,8 - 10,0				
200	9	3,0 - 3,9				

Port closing difference between control-rod travel 9 mm and 21 = 1,2-1,3mm camshaft

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed Degree of deflection of control lever rev/min	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			4 Control lever deflection in degrees	Lower rated speed		3 Torque control			
			4	5	6		rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
ca.71	1150	16	without auxiliary spring			ca.24	250	6	1130	0		
	1190	10							100	19 - 21	450	0
	1210	6,2	with auxiliary spring				250	5,7-6,3	300	1,2-1,8		
	1200	6 - 10							300	3,8-5,9		
	1220	3,6-6,6							450	0 - 1		
	1260	0,6-2,9										
2a	1320	0 - 1										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
970	77,0 - 79,0	1160-1180					250	6

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

En

PES 6 A 70 B 410 RS 122 RQ 250/1450 A 200 D

supersedes

1.8.59

company:

Daimler-Benz

engine

OM 312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,5 - 7,0	0,3			
	6	1,2 - 1,9				
	18	11,1 - 11,9				
200	6	0,6 - 1,5				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		④				⑤				③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1350	13,6-14,4	1350	14	1450	13,4-14	520		200	5,6-7,6	400	15,8-17,8
				1470	8 - 14			250	4,4-6,6	600	15,4-15,8
				1500	0 - 9			300	3 - 5	800	14,9-15,2
				1560	0			370	0 - 2,5	1000	14,1-14,5
								420	0		

Torque-control travel on flyweight assembly dimension a = 0,6 mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm Control rod travel 7
1000	34,0 - 36,0	500	500	34,0 - 37,0	100	mind. 7,9
			700	34,5 - 37,5		
			1430	34,5 - 37,5		

Checking values in brackets

Test Specifications Fuel Injection Pumps **(1A)** and Governors

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VDT-WPP 001/4

Edition 4.74

En

PES 4 A 75 C 320/3 RS 1257
PES 4 A 75 ^C_D 320/3 RS 1267

EP/RSV 300-1175 A1 B11

supersedes 2.71
company 10.71
engine Hürlimann
DS 95

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

**

Port closing at prestroke 1,9+0,1 RW 9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,7 - 5,1	0,4			
	6 15	1,9 - 2,6 10,4 - 11,5				
200	6	0,9 - 1,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control lever deflection in degrees 7	Lower rated speed		3 Torque control rev/min 10	Control rod travel mm 11
	mm 2	mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9		
ca.65	1175	16,0	without auxiliary spring			ca.27	300	6,0	1150	0
	1220	11,6					100	19 - 21		
2a	1280	3,8	with auxiliary spring				300	5,7-6,3	450	0
	1240	7,0-10,2					360	2,8-4,4	340	1,2-1,8
	1300	1,4- 3,8					480	0 - 1		
	1380	0 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9		
1150	59,5-61,5 (58,5-62,5)	1185-1195*	500	53,0-56,0 (52,0-57,0)	100	7,9-8,9 (→ 1267)				

** Port closing difference between control-rod travel 9 mm and 21 = 1.6+0,1mm camshaft.

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4
10. Edition

En

PES 4 A 95 C 420 LS 3013
D 420 LS3023

EP/RSV 300-1100 A2B538DR
375-1100
375-1100 A2B651DR
375- 875 A7B696 R

supersedes (9) 31.7.73
company C a s e
engine A 336 BDT

Test with Case overflow valve and governor as per special setting (not for 696R!)
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	8,4 - 9,0	0,5			
	6 15	4,0 - 5,0 16,4 -17,8				
200	6	1,4 - 2,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV .. 538DR, 651 DR

① Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			④ Control-lever deflection in degrees 7	Lower rated speed		③ Torque control rev/min 10	Control rod travel mm 11
	mm 2	mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9		
ca.38	1200 1160 1190	11,2 6,0 2,6	without auxiliary spring			ca.16	375	5,9	1100 450	0 0,3-0,6
②a	1140 1180 1260	10,6-11,4 4,4- 6,2 0,3- 1,0	with auxiliary spring				150 375 450 540	19 -21 5,6-6,2 1,4-3,4 0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40° C (104 F)		⑥ Rotational-speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	121,5-124,5 (120,5-125,5)	1140-1155*	750 1200	122,0-126,0 max. 125,0 11,5-19,5 (10,5-20,5)	100	13,6-14,4	375	17-23 cm ³ /1000

Checking values in brackets

* 1 mm less control rod travel than col 2

12.74

Testoil-ISO 4113

B. Governor Settings

EP/RSV .. 696R

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 59	885 900 920	12,0 9,5 5,8	without auxiliary spring			ca. 29	375		875	0
2a	900 950 1000	8,5-10,0 1,5-3,8 0,3- 1				with auxiliary spring				

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.	3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	8	9
875	132,0-135,0 (131,0-136,0)	880-895	900	86,5-111,5 (85,5-112,5)	100	13,5-14,5	375	17-23 cm³ / 1000		
			940	11,5- 21,5 (10,5- 22,5)						

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a										

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.	3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)								
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

As opposed to VDT-WPP 001/4 - 1st supplement - pumps 2263, 2264, 2354, 2459, 2460, 2461 and 3013 feature the following special setting:

- | | | |
|--|------------------------|----------|
| 1. Governor-spring adjustment | corresponds to | (1) |
| 2. Pre-adjustment of full-load delivery and noting down of control-rod travel | roughly corresponds to | (2) |
| 3. Reduce full-load control-rod travel as opposed to (2) by 1.0 mm by screwing back full-load stop screw | roughly corresponds to | (2) |
| 4. Screw in torque-control retainer until full-load delivery is attained | roughly corresponds to | (3) |
| 5. Adjustment of breakaway | corresponds to | (6) |
| 6. Testing of torque control and fuel-delivery characteristics | roughly corresponds to | (3) (3a) |
| 7. Idle adjustment | corresponds to | (4) |
| 8. Testing high idle; test starting fuel delivery and adjust with control-rod stop | corresponds to | (5) |

Please consult test instructions as regards information given in parentheses!

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors



40

WPP 001/4

MWM 2,1 a

En

PES 4 A 55 B 410 RS 413 EP/RSV 250-1500 2 A 45 d
A377 d
S 1046 400-1500 A 2 A 45 d **
395 D

supersedes 20.7.60
company Südd. Bremsen
engine AKD 10 V

** See page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC) RW 9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	2,1 - 2,5	0,2			
	6	0,6 - 1,1				
200	9	1,7 - 2,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

250 - 1500

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 61	1500 1570 1630	16 10,7 5,7	without auxiliary spring			ca. 21	250	6	1480	0
2a	1580	8,5-11,2	with auxiliary spring			ca. 21	150	19 - 21	1200	0,5-0,7
	1600	6,6- 9,7					250	5,7-6,3	1000	0,8-1,0
	1700	1 - 3,6					400	3,5- 5	400	1,3-1,5
	1800	0 - 1					500	0,5-3,5		
						700	0 - 1			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop [test oil temp 40°C (104°F)]		6 Rotational-speed limit Note changed to 1	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1480	29,2-31,2	1510-1530	1200 600 400	27,7-30,7 29,2-32,2 28,2-31,2	100 (21mm RW)	mind. 5,9	n250	RW6 (→ A377d)

Port closing difference between control-rod travel 9 mm and 21 = 7-9° camshaft.

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

400-1500

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 61	1500	16	without auxiliary spring			ca. 24	400	6	1480	0
	1560	11,6					100	19 - 21		
	1620	6,8	400	5,7-6,3	1000		0,9-1,1			
	1600	6,8 - 10	600	1 - 3,2				450	1,3-1,5	
	1700	1 - 3,6	750	0 - 1	with auxiliary spring					
1800	0 - 1									

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps **1A** and Governors

40

VDT-WPP 001/4 HAN 2,1 g
Edition 10.64

En

PE 3 A 65 B 410 LS 536
S 1039 Z

EP/RSV 250-1100 A1 A 118D

supersedes
company
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **2,1 + 0,1** mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	5,7 - 6,2				
	6 18	1,4 - 2,1 9,7 - 10,6				
200	6	0,8 - 1,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel		Intermediate rated speed			4 Control-lever deflection in degrees 7	Lower rated speed		3 Torque control	
	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6		rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 72	1100 1160 1220	16 12,2 7	without auxiliary spring			ca. 31	250	6	1080	0
2a	1200	7,2-10,2				with auxiliary spring			100	19 - 21
	1250	3,2- 5,2	250	5,7-6,3	700				1,0-1,2	
	1300	0,3- 3,5	350	4 - 5	400				1,0-1,2	
	1400	0 - 1	400	2,5-4,2	600				0 - 1	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational-speed limit Note changed to) rev/min	3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1080	39,0-41,0	1110-1130	900 500	41,5-44,5 41,5-44,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

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